AXIS 2400 Video Server

The Plug-and-Watch Remote Monitoring and Surveillance Solution for TCP/IP Networks

Administration Manual v1.0

THIN SERVER TECHNOLOGY BY AXIS

AXIS COMMUNICATIONS

Quick Installation Procedure

To get your Video Server up and running on an Ethernet network, follow these instructions:

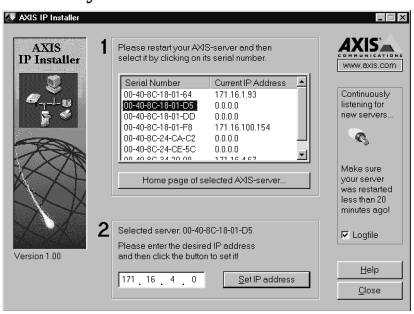
1. Note the serial number found on the underside label of the Video Server. The serial number equals the Ethernet address of the unit.
2. Connect the video camera(s) to the Video Server.
3. Connect your Video Server to the network.
4. Connect the external power supply. Note: The power supply supplied with your product is country specific. Refer to *Checking the Hardware Inventory,* on page 11 and check that the type of power supply is correct.
5. Acquire a valid and unused IP address for the Video Server from your Network Administrator.
6. Assign the IP address using your preferred method, the AXIS IP Installer program or ARP:

Easy - AXIS IP Installer

7.a *Windows 95/98 & NT* - Install the AXIS IP Installer. You will find the installation program on the AXIS Online CD and on the Axis Web Site at http://www.axis.com

7.b Run the AXIS IP Installer from the Start menu.

7.c Restart your camera server.



7.d Locate the serial number of your Video Server in the list.

7.e Enter the desired IP address, and click Set IP address.

8. To access the Video Server Home Page, click Home page of selected Axis-server...

Quick - ARP/ping

7. *Windows 95/98 & NT* - Start a DOS window and type these commands:

```
arp -s <Server IP address> <Ethernet address>
       <my PC IP address>
ping <Server IP address>
```

Example

```
arp -s 192.168.3.191 00-40-8c-10-00-86
       192.168.3.193
ping 192.168.3.191
```

UNIX & OS/2 - Type these commands:

```
arp -s <IP address> <Ethernet address> temp
ping <IP address>
```

Example

```
arp -s 192.168.3.191 00:40:8c:10:00:86 temp
ping 192.168.3.191
```

8. To access the camera server Home Page, start your Web browser and enter the IP address in the location/address field:

```
http://<IP address>/
```

Example

```
http://192.168.3.191/
```

9. The installation is complete. Access the Web-based Admistration Tools and configure the Video Server to suit your user requirements.

AXIS 2400
Video Server

Administration Manual

About This Document

This guide is applicable for AXIS 2400 Video Server software releases 1.0.

The document is intended for anyone involved in installing and using the product. It provides introductory information as well as instructions on how to set up and manage the product.

Superceding and late change information for this document will be posted to the Axis Website, as required.

Safety Notices

Please observe all safety markings and instructions when using this product.

Caution!

Potential hazard that can damage the product.

Important!

Potential hazard that can seriously impair operation.

Do not proceed beyond any of the above notices until you have fully understood the implications.

Legal Considerations

Camera surveillance can be prohibited by laws that vary from country to country. Check out the laws in your local region before using the AXIS 2400 for surveillance.

Electromagnetic Compatibility (EMC)

USA - This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his/her own expense will be required to take whatever measures may be required to correct the interference. Shielded cables should be used with this unit to ensure compliance with the Class A limits.

Europe CE - This digital equipment fulfills the requirements for radiated emission according to limit B of EN55022/1994, and the requirements for immunity according to EN50082-1/1992 residential, commercial, and light industry.

Liability

Every care has been taken in the preparation of this manual; if you detect any inaccuracies or omissions, please inform your local Axis office which can be found on the cover of this document. Axis Communications AB cannot be held responsible for any technical or typographical errors and reserves the right to make changes to the product and manuals without prior notice. Axis Communications AB makes no warranty of any kind with regard to the material contained within this document, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Axis Communications AB shall not be liable nor responsible for incidental or consequential damages in connection with the furnishing, performance or use of this material.

Year 2000 Compliance

Axis Communications AB warrants that the AXIS 2400 is Year 2000 compliant.

Trademark Acknowledgments

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Support Services

Should you require any technical assistance, please contact your local dealer. If your questions cannot be answered immediately, your dealer will forward your queries through the appropriate channels to ensure you a rapid response.

If you are connected to Internet, you can obtain on-line manuals, technical support, software updates, application software and general corporate information from any of the locations listed below.

Axis' CCTV Website	http://www.cctv.axis.com/
WWW:	http://www.axis.com
FTP:	ftp://ftp.axis.com/pub/axis

AXIS 2400 Administration Manual
Revision 1.0
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Introduction

This manual is intended for both administrators and users of the AXIS 2400 Video Server, and is applicable for software release 1.0 and above.

It includes simple step-by-step instructions for configuring, managing and using the AXIS 2400 Video Server within your networking environment. It is not necessary for the reader to have any previous networking experience to install or use this product, although some knowledge of UNIX systems would be beneficial for developing custom preprogramming scripts.

It is recommended that readers use this document as a supplement to the Wizards and other on-line information available from the Web-based interface. Direct references to all relevant online information are provided.

AXIS Online CD

The AXIS Online CD supplied with this product provides an easy-to-use electronic catalog that includes all of the latest AXIS Utilities Software, Product Software, White Papers, User Documents, Technical References, Technical Notes, etc. It is compatible for use within all of the supported Axis computing environments.

You can view the contents of the AXIS Online CD via the Adobe Reader interface or HTML interface. All documents presented on the CD are in PDF format.

Notes: If Adobe Acrobat Reader 3.0 is not installed on your system:

- Windows users can click the Get Adobe Reader button from the main user interface.
- Non-Windows users can locate and run the appropriate installer from the tools/Acrobat/ folder. Refer to the readme.txt file for full path name details.

Axis Websites

All of the software and information provided on the AXIS Online CD is also available from:

- Axis' Website for dedicated surveillance products at: **http://www.cctv.axis.com/**
- Axis' Corporate Website at: **http://www.axis.com/**, or

From both sites, you can also access corporate and support information, the Axis' Network Camera Developers Pages, and learn more about other Axis products.

Product Overview

The AXIS 2400 Video Server connects video cameras to Ethernet or Fast Ethernet networks.

Supporting up to four PAL/NTSC 4 video cameras, it includes a built-in Web server that enhances traditional surveillance systems and provides added networking connectivity for distributing monitored images over a secure intranet network, or even the Internet. Video camera management, configuration, and monitoring - all at your fingertips from a standard Web browser!

The Web-based interface includes several user-friendly Wizards that not only simplify the installation process, but also allow for a seamless and automated integration into your networking environment and custom applications. Furthermore, the Web-based networking structure minimizes the need for costly coax cabling - optimizing your imaging broadcast for a minimal connection overhead.

The AXIS 2400 is the smart and cost-effective solution for the sophisticated demands of a modern interactive surveillance and remote monitoring system. Simple to install and easy to use.

Features and Benefits

Ease of Use - The AXIS 2400 has plug-and-picture functionality - all you need to do is assign a valid IP address. The only software required is Microsoft Internet Explorer 4.x (used Axis' ActiveX component - AXIS Camera Control), or Netscape 4.x or above.

Cost-effective - Increases image distribution with minimal connection overhead to provide a reliable and low-cost resource for network imaging. Absolutely no hidden accessories; such as, expensive software, management workstations or specific video cabling, is required.

Open Standards Environment - Supporting TCP/IP networking and Internet-related protocols, SMTP e-mail and the HTTP Web protocols, the AXIS 2400 can be used in mixed operating system environments; such as, Windows, UNIX, Macintosh and OS/2.

Simple Administration - Using a standard Web browser, you configure and manage the AXIS 2400 directly from its own Web pages. The AXIS 2400 also supports FTP so that snapshots can be taken and saved remotely. When a new firmware release becomes available, you can batch upgrade all of your Axis Video Servers over the network simultaneously with the AXIS ThinWizard.

Standard Image Format - The AXIS 2400 generates high-quality pictures in standard JPEG format, which can be viewed using any standard Web browser.

Picture Updating - The on-board ETRAX 100 processor and revolutionary AXIS ARTPEC-1 Real Time Picture Encoder provides an amazing power-synergy to deliver up to 30 frames over 10/100MB networks.

Wide Range of Applications - The AXIS 2400 offers living video over the network for enhancing and modernizing traditional CCTV systems - and much more.

The AXIS 2400 allows remote CCTV and video access directly from a standard Web browser. Users can access live images or remotely control CCTV at any time anywhere. Accordingly, the AXIS 2400 can be used for: verifying intruder alarms, traffic surveillance, in banks, parking lots, factory monitoring, industrial surveillance, visual security systems, image archiving, etc. SMTP e-mail is supported which allows images to be sent as e-mail attachments at predetermined times or events.

External Device Connection - The auxiliary inputs make it possible to trigger the AXIS 2400 from external devices, e.g. IR-sensors, switches, alarm relays etc.

Pan/Tilt Device Connection - Via an RS232 or RS485 serial interface, you can combine the AXIS 2400 with a Pan/Tilt device for automatically adjusting the camera orientation.

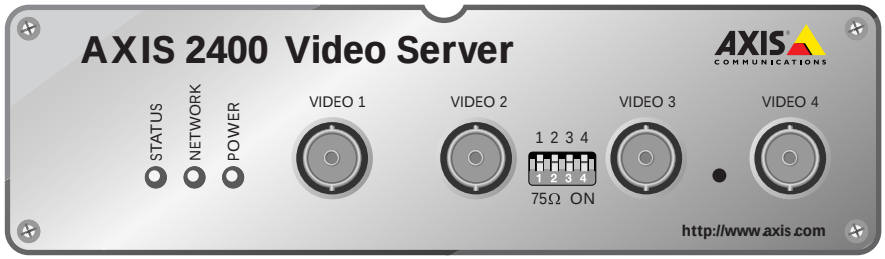
Security - The AXIS 2400 includes a self-contained Web server. This means that the camera server is secured like any other Internet host. The Network Administrator can decide whether individuals, groups, the whole company or the whole world may access your video server. This protection is normally implemented using the user security settings within the AXIS 2400 in combination with an organization's Internet firewall.

Web Forum Discussions - Axis Communications have a Web forum for ideas and suggestions for possible camera applications. Axis also maintain a collection of interesting links where you can insert your own link to your application and keep lists of application notes, FAQs and other related information.

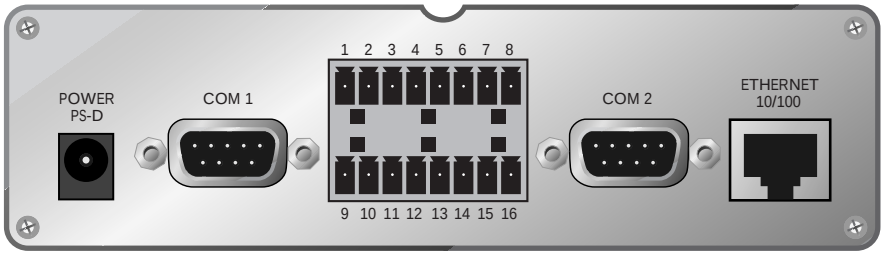
Network Camera Servers Developer's Pages - The Camera Division at Axis maintain a specialist site for network camera developers. New exciting application ideas, tools, and preprogramming scripts are constantly being added - this is an invaluable reference site for Axis' development partners and OEMs. Follow the camera links and check it out at: **http://www.cctv.axis.com/** and **http://www.axis.com/**

Physical Description

Read the following information to familiarize yourself with the AXIS 2400, making particular note of where the connectors and indicators are located. This information provides a useful reference during the installation of the product into your networking environment.



Front Panel



Rear Panel

Video Inputs - The four video inputs (VIDEO 1-VIDEO 4) are terminated with four coax/BNC video-in connectors. Each input is equipped with signal autosensing functionality to provide full connectivity to cameras using different video formats, e.g. NTSC, PAL, black/white 50Hz or black/white 60Hz. Physical connections made using RG59, 75 ohm coax video cable have a recommended maximum length of 800 feet (250 meters).

DIP Switches - The DIP switches provide the line termination for each video input. The unit is shipped with the line termination ***enabled*** for each video input; that is, all DIP switches set in the down-position.

If the AXIS 2400 is to be connected in parallel with other equipment, disable the input termination by turning the corresponding DIP switch to the **up-position**. Failure to do this can cause the picture quality to be impaired.

I/O Terminal Block Connector - The I/O terminal connector block is located between the two serial ports and provides the physical interface to one relay switch output, four digital photo-coupled inputs and an RS-485 interface. For details, refer to *Appendix F - The IO Terminal Block*.

Use this connector for transmitting data over a multi-drop communication lines, RS485 Pan Tilt devices and external triggering - typically associated with CCTV equipment. The connector can be utilized as an alternative connection point for DC supply to the unit.

RS-232 Serial Connectors - Two 9 pin D-sub connectors providing RS-232 serial connection, one of which is multiplexed with the RS-485 port via the Terminal Block Connector. Typically used for Pan/Tilt device interface.

Network Connector - The AXIS 2400 is designed for 10 Mbps Ethernet and 100 Mbps Fast Ethernet networks and connects to the network via a twisted pair category 5 cable (10baseT and 100baseTX) terminated using a standard RG-45 connector. Supporting NWAY, the AXIS 2400 detects the speed of the local network segment and varies the speed of data communication accordingly, between 10 Mbps and 100 Mbps.

Power Supply Connector - Jack socket (PS-D) for connection of AXIS 2400 power supply. The terminal block connector provides an auxiliary connection point for power to the unit.

Note: The power supply supplied with your AXIS 2400 is country specific. Please check that the type of power supply you are using is correct. See page 11.

Status Indicator - The multi-colored status indicator defines the operational status of the server and under normal conditions is permanently green. The indicator flashes and briefly displays orange during the start up and self test routines, before turning green. A red displays suggests a problem with the AXIS 2400, in which case you should refer to *Appendix A - Troubleshooting*.

Power Indicator - The Power indicator is normally lit while power is applied. If it is not lit, or it flashes, there is problem with the AXIS 2400 power supply.

Network Indicator - After completion of the startup and self test routines, the multi-colored Network Indicator flashes independently, as follows:

- yellow - indicating network activity on a 10MB Ethernet network
- green - indicating network activity on a 100MB Fast Ethernet network
- red - indicating physical connection to the network.

Control Button - Located between the VIDEO 3 and VIDEO 4 input connectors, this button is recessed within the product casing. Using a suitably pointed object, you press this button to restore the factory default settings.

Serial Number - The serial number is located on the underside label of the AXIS 2400. Please note that the serial number of your AXIS 2400 is identical to the Ethernet address of the unit.

Installation

Follow the instructions included in this section to install the AXIS 2400 into your networking environment. Each phase of the documented installation procedure is summarized below:

- Checking the Hardware Inventory
- Connecting Your Cameras to the AXIS 2400
- Assigning an IP Address
- Verifying the Installation

Checking the Hardware Inventory

Unpack and check all the items against the check list below. Contact your dealer if anything is missing or damaged. All packing material is recyclable.

Hardware	Model Variants	Part Numbers
Video Server	AXIS 2400	0092- 001- 01
Power Supply	Europe	14233
	UK	14234
	Australia	14255
	USA	14253
	Japan	14254
Media	**Title**	**Part Numbers**
CD-ROM	AXIS Online CD	-
Printed Materials	This Administration Manual	16644

Connecting Your Cameras to the AXIS 2400

The AXIS 2400 can accommodate up to four coax/BNC connected video sources that can be displayed simultaneously in quad format or singularly; and although the number of video sources connected to the server will impact the frequency of picture updates, the AXIS 2400 delivers up to 25 PAL and 30 NTSC frames/second over 10/100MB networks.

Important!

Due consideration to your available network bandwidth and the demands of your application should be considered prior to connecting video sources to the AXIS 2400. Generally, your application is not able to support simultaneous multi-client access to more than one single video source at frequencies greater than 20 frames/second.

Refer to your camera supplier's documentation for details on how to connect the cameras.

Connecting the Video Server

1. Note the serial number of your video server for future reference during the installation procedure. This is located on the underside label of the video server.
2. Connect your video server to the network with twisted pair category 5 cable (10baseT and 100baseTX) terminated using a standard RG-45 connector.
3. Connect the power supply to the video server.
4. Check that the Power indicator is constantly lit.

Assigning an IP Address

To enable access to your video server you must first assign it an appropriate Internet Address.

Before you begin:

- Make sure the camera server is powered up and attached to the network.
- IP Address: Acquire an unused IP address from your Network Administrator.
- System Privileges: You need root privileges on your UNIX system and administrator privileges on Windows NT servers.
- Ethernet Address: Each AXIS 2400 is pre-configured with a unique Ethernet Address that is based upon the unit serial number, which you can find printed on the underside label of the unit. You will need to know the Ethernet address of your Video Server to install the unit.

Mapping a Host Name to the IP Address

If you are using host names, you can map a unique host name to the acquired IP address. Refer to your system manuals or to your Network Administrator for instructions on how to perform the name mapping on your particular system.

Note: If the host name has not been included in the system host table, you can still perform the following instructions on how to download the IP address. In this case, simply replace the host name entry with the IP address wherever required

Choosing an Appropriate Method

Set the IP address using an appropriate method for your operating system from the table below:

Method	Operating Systems	Refer to...
AXIS IP Installer	Windows 95/98 and NT	"*Using the AXIS IP Installer*" on page 14
ARP Requires the IP address for each new device to be downloaded individually and is not appropriate for use over routers.	Windows 95/98 and NT	"*Using ARP in Windows 95/98 and Windows NT*" on page 14
	UNIX, OS/2	"*Using ARP in UNIX and OS/2*" on page 15
RARP Downloads the IP address to each device automatically requires a RARP daemon on your system operates within a single network segment only.	UNIX	Refer to *Using RARP in UNIX,* on page 15.
BOOTP Similar to RARP, although it can operate on the entire network. It requires a BOOTP daemon on your system. A request made to an active BOOTP or RARP daemon initiates a search of the Ethernet address table (RARP daemon), or boot table (BOOTP daemon) for an entry matching the unit's Ethernet address. If a matching entry is found, the daemon then downloads the IP address to the device	UNIX	Refer to *Using BOOTP in UNIX,* on page 16

Important!

Do not use the default or example IP address when installing your video server. Always consult your Network Administrator before assigning an IP address.

Using the AXIS IP Installer

The AXIS IP Installer is a Windows 95/98 & NT program that sets the video server IP address for you. It also allows you to access the video server home page via a Web browser. The program is available on the AXIS Online CD and from Axis' Websites at **http://www.cctv.axis.com/** and **http://www.axis.com/**

Installing the AXIS IP Installer:

1. On the AXIS Online CD, click on the **Software** button.
2. Select the IP Installer and click **Install**. The **AXIS IP Installer - Setup** dialog is displayed on the screen.
3. Follow the instructions as they appear on the screen.
4. Click **Finish** to complete the setup.

Setting the IP Address with AXIS IP Installer:

1. Run the **AXIS IP Installer** from the **Start** menu. The **AXIS IP Installer** dialog is displayed on the screen.
2. Restart your camera server.
3. Select the serial number of your camera server in the list. The serial number is identical to the Ethernet address of the unit.
4. Enter the desired IP address. Click **Set IP address**. The IP address will now be set.
5. To access the home page of the camera server, click **Home page of selected Axis-server...** You can now configure the video server according to your requirements.
6. Click **OK** to exit the program.

For more help during the installation of the IP address, click **Help** or **F1**.

Using ARP in Windows 95/98 and Windows NT

To download the IP address and verify the communication, start a DOS window and type the following commands:

```
arp -s <camera IP address> <Ethernet address>
ping <camera IP address>
```

Example:

```
arp -s 192.16.253.80 00-40-8c-10-00-86
ping 192.16.253.80
```

The host will return '`Reply from 192.16.253.80 ...`' or some similar message. This means that the address has been set and the communication is established.

Important!

Windows 95 only: When using the Windows 95 implementation of ARP, change the first line to:

arp -s <camera IP address> <Ethernet address> <w95host IP address>, where <w95host IP address> is the IP address of your Windows 95 host.

Example:

arp -s 192.16.253.80 00-40-8c-10-00-86 192.16.253.81
ping 192.16.253.80

Note: When you execute the ping command for the first time, you will experience a significantly longer response time than usual.

Using ARP in UNIX and OS/2

To download the IP address and verify the communication, type the following commands:

```
arp -s <camera IP address> <Ethernet address> temp
ping <camera IP address>
```

Example:

```
arp -s 192.16.253.80 00:40:8c:10:00:86 temp
ping 192.16.253.80
```

The host will return '`192.16.253.80 is alive`', or some similar message to indicate that the address has been set and the communication is established.

Note: When you execute the ping command for the first time, you may experience a significantly longer response time than usual.

Using RARP in UNIX

Follow these steps to use the RARP method in UNIX:

1. Append the following line to your Ethernet Address table. This is typically performed using the command `/etc/ethers`:

   ```
   <Ethernet address> <host name>
   ```

   Example:

   ```
   00:40:8c:10:00:86 camserv
   ```

2. If necessary, update your host table and alias name databases as described required by your system.
3. If it is not already running, start the RARP daemon. This is typically done using the command `rarpd -a`.
4. Restart the AXIS 2400 to download the IP address.

Using BOOTP in UNIX

Follow these steps to use the BOOTP method:

1. Append the following entry to your boot table. This is typically done using the command `/etc/bootptab`:

```
<host name>:ht=<hardware type>:vm=<vendor
magic>:\
:ha=<hardware address>:ip=<IP address>:\
:sm=<subnet mask>:gw=<gateway field>
```

   where:

```
ht   = ether
vm   = rfc1048
ha   = The Ethernet address of the AXIS 2400
ip   = The IP address of the AXIS 2400
sm   = The subnet mask
gw   = The default router address
```

   Example:

```
camserv:ht=ether:vm=rfc1048:\
:ha=00408c100086:ip=192.168.3.191:\
:sm=255.255.255.0:gw=192.168.1.1
```

2. If necessary, update your host table and alias name databases as described required by your system.
3. If it is not already running, start the BOOTP daemon. This is typically done using the command `bootpd`.
4. Restart the AXIS 2400 to download the IP address, default router address, and subnet mask.

Verifying the Installation

After assigning an IP address, verify the connection between your video server and the network.

1. Start your Web browser (see note below) and enter the name or IP address in the location/address field:

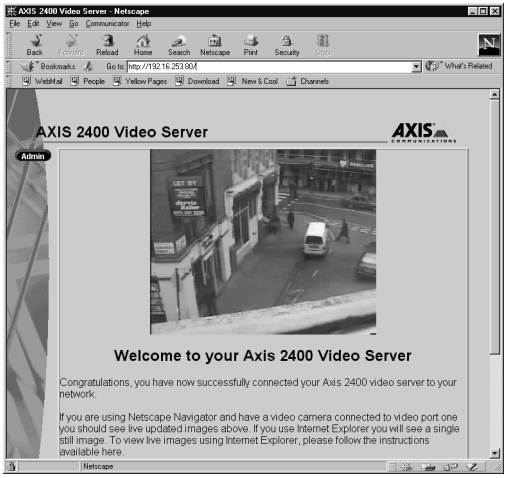
   Example

   ```
   http://videoserv/
   ```

   or:

   ```
   http://192.16.253.80/
   ```

2. The **Welcome** Page of your video server is now displayed:


AXIS 2400 Video Server - Netscape
AXIS 2400 Video Server
AXIS
Admin
Welcome to your Axis 2400 Video Server
Congratulations, you have now successfully connected your Axis 2400 video server to your network.
If you are using Netscape Navigator and have a video camera connected to video port one you should see live updated images above. If you use Internet Explorer you will see a single still image. To view live images using Internet Explorer, please follow the instructions available here.

3. To continue the setup process and configure your own application click the **Admin** button in the top left corner of this window and proceed to *Configuring the Video Server*, on page 18. Log on as user ***root*** with the default password ***pass***.

Notes: If you are using Internet Explorer, you will need to use the AXIS Camera Server software prior to accessing video images using the AXIS 2400. To do this, simply follow the instructions provided on the Welcome Page.

Web pages are kept locally for fast browsing, and your browser may occasionally display a cached image as opposed to a newly taken snapshot. When this happens, simply click Reload/Refresh in your Web browser. Some browsers may even force you to clear the cache, or use forced reload, e.g. Shift+Reload in Netscape.

Configuring the Video Server

This section is targeted specifically to personnel responsible for the administration of the AXIS 2400. The ***Administrator(s)*** is granted with high-level privileges denied to the ordinary ***user(s)***.

Before you begin:

To access the AXIS 2400 configuration pages, you must first set the Internet address as described in "*Assigning an Internet Address*" on page 17.

You configure the AXIS 2400 from a standard Web browser such as Netscape Navigator or Internet Explorer.

As a viable alternative to managing and configuring the AXIS 2400 using a Web browser, you can alternatively edit the system configuration file using a text editor and upload the file to the AXIS 2400 using FTP. For further information please refer to *Configuring using FTP,* on page 33.

Overview of the Administration Tools

The Web-based Administration tools are displayed in a graphical user interface that allows simple point-and-click display of the system tools. Several user-friendly Wizards are provided to guide you through every aspect of the installation; from designing the user interface and configuring the supported networking protocols, right down to integrating the unit into your specific application environment - it is incredibly easy!

Important!

On-line help is available on every page within the AXIS 2400 Web interface. This information is of particular relevance when configuring the unit and should be used as a first point of reference for any administration queries. The help system is stored internally in the AXIS 2400.

Following the instructions provided within this section, use the Web-based Administration tools for configuring and managing your AXIS 2400.

Accessing the Tools

Follow the instructions below to access the Administration tools using a standard Web browser:

1. Start the Web browser and enter the name or Internet address of the AXIS 2400 on the location/address field.

Example

```
http://192.16.253.80/
```

Important!

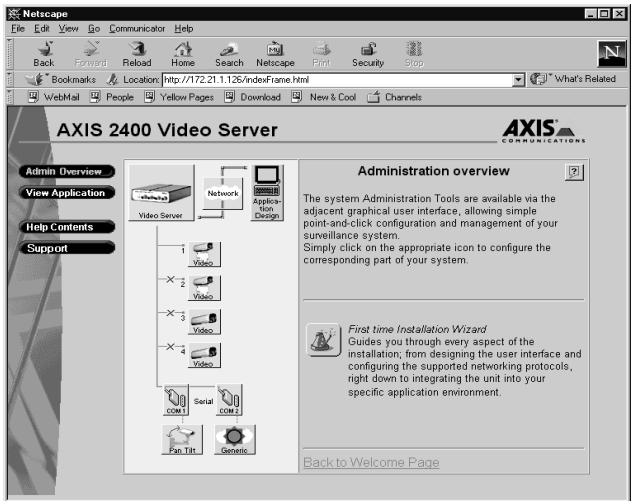
If this is the first time you have accessed the AXIS 2400, the Welcome page will be now be displayed. In this case, click the Administration button and proceed to configure your application using the Installation Wizard prior to proceeding with the next step.

The *Administrator(s)* can choose not to display the Administration and other navigational buttons from the user interface. Selecting this feature within in a Wizard ultimately means that the Administration tools can then only be accessed by entering the full *Admin* address into the URL of the Web browser; for example: http://172.19.3.52/html/admin/index.html

2. Your defined **Application** page is now displayed. Click the **Admin** button to display the **Administration Overview** page and access the system ***Administration tools.***

Notes: A prompt for a *username* and *password* is displayed when entering these pages for the first time in a Web browser session. At the prompt, log on as *root* and use the default password *pass*. It is recommended that you change the password of your AXIS 2400 as soon as possible.

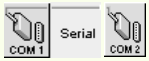
3. The various components of your video system are represented as icons within the displayed graphic. Simply click the component part you want to configure. As an ***Administrator,*** you configure and modify the system directly from this page..


Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Netscape Print Security Stop
Bookmarks Location: http://172.21.1.126/indexFrame.html What's Related
WebMail People Yellow Pages Download New & Cool Channels
AXIS 2400 Video Server
AXIS COMMUNICATIONS
Admin Overview
View Application
Help Contents
Support
Video Server
Network
Applica-tion Design
Video
Video
Video
Video
Serial
COM 1
COM 2
Pan Tilt
Generic
Administration overview
The system Administration Tools are available via the adjacent graphical user interface, allowing simple point-and-click configuration and management of your surveillance system.
Simply click on the appropriate icon to configure the corresponding part of your system.
First time Installation Wizard
Guides you through every aspect of the installation; from designing the user interface and configuring the supported networking protocols, right down to integrating the unit into your specific application environment.
Back to Welcome Page

Tools Overview

The table below provides a one-stop overview of the information and services available from the **Administration** pages:

Service	Description
Administration Overview	• The First-time Installation Wizard allows novice administrators to automatically set the most important system parameters and quickly establish an appropriate application for the system users.
View Application	• Displays the page and picture format that is presented to your users. Use this page as a a reference after making any changes to your application design.
Help Contents	• Displays the table of contents for the On-line Help
Support	• Displays support and trouble-shooting information.
Design Application Settings	• Layout and Programming Wizard: design the look-and-feel of the user interface with an easy-to-use Wizard. Choose Surveillance System or Web Attraction preconfigurations and refine the application specifically for your user needs. • Programming Script Editor: create programming scripts yourself using a text editor - recommended for advanced users only.
Network Settings	• Specify the system settings for each of the supported networking protocols, using a Wizard or manually via the Detailed View; including: - TCP/IP (Network settings) - DNS (Direct Naming Service) - SMTP (E-Mail)
Video Server Settings	• Set the system date & time, manually or automatically • Define the username and password for administratror(s) and user(s) • View parameter list and log file • Emergency Settings: Restart the unit or set server parameters to factory default.

Specific Settings	Description
Video Settings	Enable/Disable the selected video source and specify which Pan Tilt driver (serial port) each connected video camera is connected to - if any. Note: Two different icons are displayed to differentiate video sources not connected to Pan Tilt devices (icon-left) from those that are (icon-right). For each source specify: • Image settings: set the image features; such as: displaying text, clock, color or B&W etc • Video Input/Modulation: to define the video color standard automatically or manually. • Preset Positions: visible only to Pan Tilt connected sources, for creating Pan Tilt and Zoom preset conditions.
Configure Serial Port 	For each of the two supported serial ports specify: • Purpose: Pan Tilt, Generic or None • Interface Mode/Serial mode: RS485 or RS232 (Port 1 only) • Communication settings: Baud Rate (bps), Data Bits (length), Stop and Parity Bits
Pan Tilt Settings	A Pan Tilt icon is displayed underneath a Serial Port icon only if the *purpose* of the respective serial port is defined as Pan Tilt. Select the Pan Tilt driver and define the driver specific settings: Canon VC-C3Sony EVI-D30, Sony EVI-D31Sony EVI-G20, Sony, EVI-G21VideMechErnitec, ICU are all supported.
Preset Settings	A Preset icon is dappled next to a video icon only after the respective video source has been connected to a pan tilt device, via the COM1 or COM 2 ports. Click the Preset icon to create new camera positions and/or assume a previously established preset position.
Generic Settings	A Generic icon is displayed underneath a Serial Port icon only if the *purpose* of the respective serial port is defined as Generic. Configure the port as an HTTP input/output or TCP input/output and save the changes.

Designing your Application

As an ***Administrator,*** you decide the general look and feel of the user interface and determine:

- the appearance of the ***user*** interface
- how video images are to be displayed to ***user(s)***
- the services and functions available to ***user(s)***

Click the **Design Application** icon within the graphic user interface to display the settings for your application.

Application - Layout

Design the layout of the application specifically to your users needs, using either the **Wizard** or **Programming Text Editor**.

Important!

The *Administrator* can choose not to display the Administration and other navigational buttons from the user interface. Selecting this feature within in the Wizard ultimately means that the Administration tools can then only be accessed by entering the full *Admin* address into the URL of the Web browser, as defined below:

http://172.19.3.52/html/admin/index.html

Using the Wizard

Click the **Wizard button** and follow the on-line instructions to automatically configure the look-and-feel of the user interface. You can choose **Surveillance System** or **Web Attraction** preconfigurations and refine the application specifically to your needs by selecting from several of the available features, including: alarm trigger, storage of images on FTP server, sending images with e-mail, etc.

You will find that the Wizard helps you not only to define the functionality of your system; such as: Quad system with or without pre/post alarm storage, picture size and magnification parameters, but also allows you to decide some of the more cosmetic aspects of system presentation; including: background, logo, user button and product title presentation.

Click the **Finish** button to save the defined configuration to the Video Server.

Wizard Overview

As a supplement to the information provided by the available Help, the table below provides a one-stop-reference for the parameters established by the Application Wizard:

Parameter	Options	Description
Image size	• Huge size (interlaced image) NTSC=704 x 480), (PAL=704 x 576) • Full size NTSC=352 x 240), (PAL=352 x 288) • Half size NTSC=176 x 112), (PAL=176 x 144)	You can adjust the size and appearance of the displayed images: ranging from small, highly compressed pictures; to large, high-quality JPEG images. Typical file sizes for each of the available image sizes are dependent upon a number of different factors. Generally, low compression and large images sizes produce large filesizes; although higher quality images that include a lot of detail, will also increase resultant file size. **Note:** NTSC (60Hz) is the common standard in the USA, whereas PAL (50Hz) dominates in Europe.
Image Scale	x2 or x4	To allow an increase in the image display size without impacting network bandwidth, you can choose to scale your images by a multiple factors of two (x2) or four (x4). Increasing a *halfsize* image by x2 enlarges the picture area to that of a *fullsize* image - delivering a lower picture resolution, but using approximately one quarter of the network bandwidth demanded to display a fullsize image.
Page style	• Show gray background picture • Show title, line and Axis logo • Show buttons (e.g. help, admin)	The *Administrator* can choose not to display the Administration and other navigational buttons from the user interface. Selecting this feature within in the Wizard ultimately means that the Administration tools can then only be accessed by entering the full *Admin* address into the URL of the Web browser, as defined below: http://172.19.3.52/html/admin/index.html

Programming Script Editor

The Programming Script Editor editor offers advanced administrators and developers with an even greater level of flexibility for customizing the application specifically to meet their user needs. Using the on-line help as a reference, advanced users follow the instructions below to quickly develop programming scripts for time and/or alarm-triggered events:

Tip!

As a supplement to the information provided in the on-line help, the scripting language and syntax is also explained in *Appendix H- The Programming Script*. Several tips and examples are also provided.

1. Click the **Programming Text Editor** button to start the editor.
2. Enter a valid script in the main window and then click the **Save** button to deposit the script in product memory.
3. Check the **Enable** box to activate the scripts in your system.

Notes:
- Scripts can be saved but are not activated in the AXIS 2400 until the Enabled button is checked.
- Saving new scripts automatically removes any existing scripts previously saved with the Editor.
- Saved scripts are automatically displayed when the Programming Script Editor is opened.

Server Settings

Click the Video Server icon within the graphic user interface to display and/or edit the **Server Settings**. Each of the settings are described below:

Date and Time

Click the **Date and Time** icon and set the current date and time either *Automatically,* or *Manually.* Setting the date and time *Automatically* requires you to provide the Internet Address of a local NTP server and select your local time zone from the available drop-down dialog.

Click Save to register the settings with the Video Server.

Security

To prevent any unauthorized use of the Video Server, access is strictly password protected and restricted to defined ***Users*** and the ***Administrator(s)*** **only**. *Administrator(s)* have exclusive access to the product Administration Tools and determine the registration and privileges for all ordinary ***users.***

Notes: Although, the Administrator's default username and password (set to *root* and *pass* respectively) can be used for logging in to the unit for the first time, it is strongly recommended that you change the password of your AXIS 2400 as soon as possible - since all Axis products are shipped with the same password as default.

As an ***Administrato***r, you click the **Security** button to either:

- define or edit the ***Administrator*** password (the Administrator username is permanently set to root, with password default to **pass**), **or**
- define, add and delete ***user*** names and passwords

Important!

By default, the AXIS 2400 supports anonymous user access, which means that anybody on the Internet/intranet have access to the AXIS 2400 video images from a Web browser. Should you wish to restrict access to specific users, enter the user names and passwords of only those authorized users. If the anonymous user service is satisfactory to your system, simply do not add any users.
Note: Only characters a - z, A - Z and 0 - 9 are valid.

The Log File

All system interrupt commands are recorded in a single log file and stored in product memory. Consequently, the file can be used as reference for examining what events were executed during a significant event; such as, tracing server commands before, during, and after an alarm. It can also serve as a useful diagnostic tool when attempting to resolve any problem that might occur. See also *Appendix A - Troubleshooting*.

Follow the instructions below to display all Video Server commands executed since the last *Restart* of the system:

1. Click the Video Sever icon in the graphic interface.
2. **Click the View Log File** button. All recent commands are displayed in a separate window.

Viewing the Parameter List

The Parameter List provides a comprehensive list of all of the system parameters and their current settings. Follow the instructions below to display the list:

1. Click the Video Sever icon in the graphic interface.

Click **View Parameter List** to display the list.

Click **Print** to print a hard copy of the displayed list to your default printer.

Emergency Actions

In certain circumstances it may become necessary to restart or return the Video Server to its **Factory Default** settings, or initiate a hardware **Reset** of the unit. Both emergency actions can be initiated by clicking the appropriate button on this page.

Notes: Clicking Factory Default deletes any previously defined layout and preprogramming configurations.

Reinstating the Factory Default Settings

Follow the instructions below to reinstate the factory default settings in AXIS 2400:

1. Switch off the AXIS 2400 by disconnecting the power cord.
2. Using a suitably pointed object, press and continue to hold the Control button depressed.

Note: The Control Button is located between the VIDEO 3 and VIDEO 4 input connectors and recessed within the product casing.

3. While continuing to hold the Control Button depressed, reconnect the power supply cable to the video server.
4. When the Status LED starts flashing, release the Control Button.

The AXIS 2400 is now reset to factory default settings. Restart the AXIS 2400 by disconnecting and then reconnecting the power cable.

Note: The node address (NODE_ADDR parameter) remains unchanged, but all other parameters including the IP number are reset. Refer to *Assigning an IP Address*, on page 12 for details on how to reset IP number.

Network Settings

The AXIS 2400 is built upon open standards and supports the following networking protocols:

- **Transmission Control Protocol/Internet Protocol (TCP/IP)** - used by the Video Server for transmitting data over the network.
- **Domain Naming Service (DNS)** - The Internet service used by the product for translating domain names into Internet Addresses
- **Simple Mail Transfer Protocol (SMTP)** - the Video Server can be pre-programmed to send images as e-mail attachments to pre-defined addressees. This is the protocol for sending E-mail messages between e-mail servers on the network.
- **HTTP** - the fundamental protocol used by the WWW, used for configuring and managing the unit and displaying the video images over the network.

Click the Network icon within the graphic user interface, or click the **Network Settings** button to and configure the above protocols ***Automatically*** - using the **Wizard**, or ***Manually*** - by clicking **Detailed View**.

Using the Wizard

The Wizard guides you through the setup procedures for each of the above protocols - one at a time. After completing one protocol, you optionally proceed to configure another protocol.

Having determined the settings for each of the supported protocols, you should then use the **Detailed View** to enable or disable the protocols.

Clicking the **Finish** button on the last page of the Wizard saves the new settings to the Video Server.

Using the Detailed View

Clicking the **Detailed View** displays the **Network Settings** dialog which is navigated by clicking any visible tag. From this dialog you can display, edit and refine the settings for any supported network protocol.

Note: Any changes that you make are only implemented when you click the OK button; consequently, all of the protocols can be safely browsed and edited before deciding to save the settings.

With reference to the on-line help information and the table below, use the **Detailed View** to manually configure the Network Settings:

TCP/IP Parameters	Description
BOOTP	Enable the BOOTP protocol for downloading the Internet address automatically. For further information on using BOOTP see also *Using BOOTP in UNIX,* on page 16.
RARP	Enable the RARP protocol for downloading the Internet address automatically to the unit. For further information on using RARP, see also *Using RARP in UNIX,* on page 15.
IP Address	Specifies the unique 32-bit IP address of your unit.
Default Router	Defines the default router for the AXIS 2400 which by default, is set to automatic router search.
Subnet Mask	Defines the subnet mask for the AXIS 2400. Used for determining when the traffic should be sent via a router. The default 0.0.0.0 indicates automatic router sensing.

DNS Parameters	Description
Primary DNS	Defines the IP address of the primary DNS server. Used for identifying computers with names instead of IP addresses.
Secondary DNS	The IP address of the secondary DNS server. The secondary DNS server will be used in case the primary DNS server is unavailable or disconnected.

SMTP Parameters	Description
SMTP Mail Server	Defines the server that is to provide your e-mail facilities.
SMTP Return Address	The reply address for e-mails sent by the AXIS 2400; that is, the name address that is to appear in the 'sent by' field of the dispatched e-mail.

HTTP Parameters	Description
URL to Page	Defines a target Web page for displaying the connected video sources.
URL to Image	Defines a target image for displaying the connected video sources.

Video Settings

Each Video icon (**Video 1** to **Video 4**) within the graphic display represents a video input to the AXIS 2400. Icons that are dull or opaque in color indicate the connected video source is not enabled; whereas, a cross **x** visible to the left of a video icon means that a video signal is not present at the relative input.

Click the appropriate button to configure your chosen video source, including:

- Video Enable/Disable
- Specifying the Pan Tilt driver (serial port) each connected video camera is connected to - if any.
- Setting the image features as displaying text, clock, color or B&W etc
- Specifying the video modulation standard, either automatically or manually.

Note: For optimized performance, it is recommended that you disable all unused video ports.

Image Settings

The image settings can be set *generically* - for all connected video sources, or *specifically* - limiting your settings to the video source selected previously in the graphic only.

Click the Image Settings button to set the image features for a selected video source; then, from the **Apply settings to** drop-down dialog, select whether the settings are to be applied generically or specifically; that is, **Video 1's** or **All Videos**.

With reference to the table below, configure the image settings to match your application demands:

General Parameter	Description
Display date & time on Image	Check to enable time display within the selected video source(s).
Display text on image	Enable or disable the display of a defined text string within the selected video image. Type the text string that you want to display within the Text field.
Miscellaneous Settings	
Color	Choose to display *Color* or *Black and White* video images.
Compression	Determines the compression factor for the selected video source: *low, medium or high.* Low compression optimizes picture quality, but generates larger image file sizes that demand greater network bandwidth.

Note: The image settings can also be entered directly as a CGI parameter in your URL.

Using CGI parameters embedded in a URL request overrides any parameters defined within the Image Settings dialog.

For further information on using CGI Parameters, see also *Appendix E - CGI Parameters*

Input Modulation

There are currently several different video transmission standards. Phase Alternating Line (PAL) modulation delivers 625 lines at 50 half-frames per second and is the dominant television standard in Europe; whereas, NTSC delivers 525 lines of resolution at 60 half-frames per second and is the common standard in the United States. These and several derivative modulation standards are supported by the AXIS 2400.

The type of modulation can be set *generically* - for all connected video sources, or *specifically* - limiting your settings the selected video source clicked previously in the graphic only. Furthermore, all video sources can be configured ***Manually*** or ***Automatically***.

Click the Video Input/Modulation button to set the video color standard for a video source; then from the drop-down dialog, select whether the settings are to be applied generically or specifically; for example, **Video 1's** or **All Videos**.

Setting the Sources Automatically

Simply click the **Start** button to initiate a search of the selected video source(s). An appropriate modulation type is then automatically assigned to the selected source(s).

Setting the Sources Manually

You can choose to set the connected video sources *Manually* if you wish. You select a modulation type from the drop-down dialog box, which is duplicated for your information below:

- PAL BGH/NTSC M:
- NTC 4.43, 50Hz / PAL 4.43, 60Hz
- PAL N/NTSC 4.43, 60Hz
- NTSC N/PAL M
- SECAM / PAL 4.43, 60Hz

Clicking **Save** registers your the settings with the Video Server.

Serial Port Settings

The AXIS 2400 is supplied with two internal serial ports managed directly from the user interface:

- **Serial Port 1**- typically used for controlling CCTV devices supporting Pan Tilt, this port can be logically connected to the **COM 1** or the **Terminal Block Connector**; consequently, it is configurable as either an **RS232** or **RS485** port.
  Click the **Port1** within the graphic interface to determine the **Purpose, Interface Mode** and **Communication Settings** for port.
- **Serial Port 2** - logically connected to the COM2 this port provides the high-speed RS232 interface for connecting accessory equipment; such as, VCRs and badge readers to the AXIS 2400.
  Click the **Port 2** icon within the graphic interface to determine the **Purpose** and **Communication Settings** for the port.

Important!

The Videmech driver is the only External Pan Tilt device (standalone device connecting to a fixed video camera without inherent PTZ support) supported directly by the AXIS 2400. Unless stated to the contrary, Pan Tilt devices are assumed to be in-built within the video camera where referred to in this document.

Purpose

Both serial ports - **Port 1** and **Port 2** - can be designated as either of the following:

- **Generic** - if you are developing a Pan, Tilt and Zoom control using **HTTP** (CGI parameters) in a Web browser application, **or** a **TCP** client application.
- **Pan Tilt** - from the drop down dialog choose from several Pan Tilt drivers supported as standard by the AXIS 2400. A list of the support drivers is provided below.
- **None** - if you are not connecting a Pan Tilt or Generic driver to the port.

Interface Mode

Logically connect **Serial Port 1** to **COM 1** or the **Terminal Block Connector** and configure it as either an **RS232** or **RS485** port. Select an appropriate standard from the drop-down dialog.

Notes: Most CCTV equipment supports the RS485 standard - that is a bi-directional, half duplex standard for transmitting data over multi-drop communications line. Supporting up to 32 drivers and 32 receivers over a single twisted pair cable, the maximum cable length should not exceed 4000 feet. Typically used for connecting a single PC to several addressable devices over the same cable.

Many Video cameras support RS232; as it provides for a reliable point-to-point communications at low data transmission rates. Your wiring distances should be limited to one or two hundred feet for asynchronous data lines, and about 50 feet on synchronous lines. RS232 lines can normally be converted to RS485 with a simple interface converter.

Communications Settings

Using the drop-down dialogs for Baud Rate, Data Bits, Stop Bits and Parity; match the AXIS 2400 data transmission formats with the devices connected to the COM1 and COM2 ports.

Note: Check the user documentation supplied with your Pan Tilt device if you are unsure of the correct transmissions format.

Pan Tilt Settings

Before you begin:

- Ensure that your pan tilt devices are properly connected prior to proceeding with this section. Instructions for the physical connection of pan tilt devices are provided in *Appendix D - The RS232 Interface*.
- The Pan Tilt icon is displayed within the graphic interface only after the Purpose of the relative Serial Port has been set to Pan Tilt. If the Pan Tilt icon is not visible, or a Generic icon is displayed next to the relative serial port icon, refer to *Purpose,* on page 30 and redefine the purpose of the port.

Having defined the ***purpose*** as **Pan Tilt**, specified the related ***Interface Mode*** (COM1 only) and defined the ***Communications Settings*** for a serial port, you can then proceed to select an appropriate driver for connecting Pan Tilt devices.

Click the Pan Tilt icon within the graphic user interface to view and configure the General **Pan Tilt** settings, including:

- Defining the driver for you Pan Tilt device
- Viewing and editing the driver-specific settings
- Creating, editing and deleting preset camera positions

Choosing the Pan Tilt Driver

The AXIS 2400 supports a variety of standalone Pan Tilt devices as standard.

You select an appropriate driver from the drop-down dialog, and click **Save** to register your choice with the AXIS 2400.

The driver configuration is then refined by clicking **Driver Specific Settings.**

Refining Driver Specific Settings

A comprehensive list of supported drivers is provided in *Appendix D - The RS232 Interface*. For specific instructions on how to refine your installation by setting the respective **Driver Specific Settings**, see *Supported Pan Tilt Drivers,* on page 49.

Preset Positions

To enable quick and accurate camera positioning to known camera ***hotspots***, the Administrator can define within the server up to 20 preset positions. Preset positions are saved as a named entities that can be re-established at any time by the ***Administrator(s)***, or ***Users*** - if these privileges have been set by the ***Administrator(s)*** during the Application Layout.

Defining Preset Positions

The camera *angle* is controlled by Pan Tilt and Zoom control bars. Follow the instructions below to define a preset a position:

1. Click the **Preset Position** button. An image taken from the selected source - at its current position - is displayed in a new window.
2. Using the **Pan Tilt** and **Zoom** control bars, move the camera to the desired position.
3. Enter a descriptive name in the **Current Position** field.
4. Click **Save** to register the new preset position with the AXIS 2400 and then check that the entered name is included in the **Preset Positions** drop-down list.
5. Click **Remove** only if you want to remove this or any other preset position in the list.

Generic Driver Settings

Defining the ***purpose*** of the related serial port (COM1 or COM2) to **Generic** will provide you with the option to position the video source directly using **HTTP** (CGI parameters) in a Web browser application, **or** with a **TCP** client application such as Visual Basic. Please refer to *Appendix D - The RS232 Interface* for further information on this.

Important!

The Generic icon is displayed within the graphic interface only after the Purpose of the relative Serial Port has been set to Generic. Refer to *Purpose*, on page 30 and redefine the purpose if the Pan Tilt icon not visible, or a Pan Tilt icon is displayed next to the relative serial port icon.

Configuring using FTP

As an alternative to configuring the AXIS 2400 using a Web browser, the configuration parameters of your unit can also be modified using the File Transfer Protocol (FTP).

FTP is supported by most operating environments and is useful method for quickly downloading standard pre-configurations to one or several remote video servers.

Modifying the Configuration File

Follow these instructions to modify the configuration file using FTP:

1. In a DOS or UNIX window, type **`ftp videoserv`**, where `videoserv` is the name or IP address of your AXIS 2400.
2. Login using the user root and the root password. Default password is **`pass`**. It is highly recommended that your change the root password, since all Axis products are shipped with this password as default.
3. Use **`get config.ini`** to access the configuration file.
4. Edit the config file using any text editor. In Windows 95/98 and Windows NT environments, you can for example use Notepad.
5. Once the editing is complete, save the file as *config.ini*. Type **`put config.ini`** to save the configuration file permanently.
6. To exit FTP, type the command **`quit`**, **`bye`**, or **`exit`**.

Using the Video Server

This section is specifically targeted at system ***Users***; that is, personnel responsible for using the AXIS 2400 as part of an integrated surveillance system.

Important!

- Your system *Administrator(s)* has installed the AXIS 2400 to your computer network, connected several surveillance video cameras to the unit, and tailored the user functions and general look and feel of the system to specifically meet your surveillance needs; consequently, many of the functions and examples provided within the section can vary from those displayed in your system.
- Any deficiencies or shortcomings within your application should be escalated to the system *Administrator(s)* who has with high-level privileges normally denied to ordinary *user(s)*.
- On-line help may not be available from the user interface, as your access to this information may be denied by your system Administrator.

Accessing your Surveillance Images

The AXIS 2400 can be used with most operating systems; including: Windows 95/98 and NT as well as Linux, UNIX, Mac and several others. You access the AXIS 2400 from any standard Web browser; such as, Netscape Navigator 4.x or Internet Explorer 4.x (see note below).

Note: If you are using Microsoft Internet Explorer, you will need to install the AXIS Camera Control software prior to accessing live video images from your browser. This software is supplied with the AXIS Online CD and available via Axis' Website at: http://www.axis.com/

Follow the instructions below to access your surveillance images:

1. Start your Web browser application
2. Enter the name or IP address of the AXIS 2400 into the **location/address** field (URL) of your Web browser:

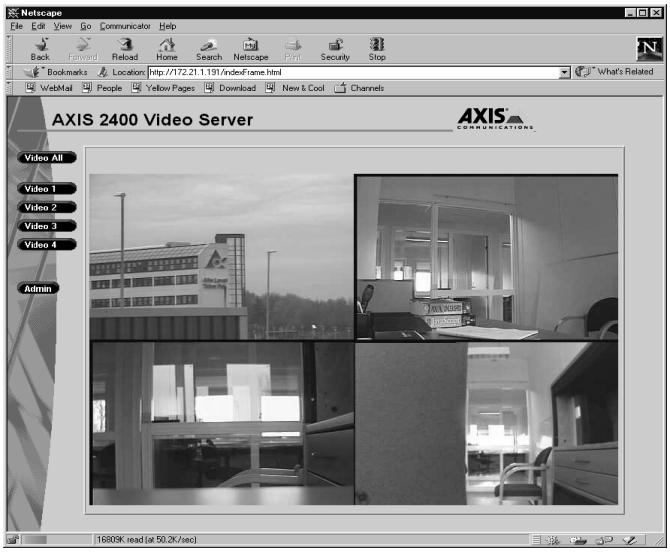
Example

```
http://192.16.253.80/
```

A video image, similar to one of the examples featured opposite, is now displayed within your Web browser.

Typical Image Styles

Because the look and feel of the AXIS 2400 user interface is totally decided by your *Administrator(s)*, the images format and page styles can vary considerably. Typical layout styles are featured below - but these examples should **not** be interpreted as an exhaustive library of available style formats.



Typical Quad Image Style

Typical Single Image Style

Disconnected Video Sources

If your Administrator(s) has configured the AXIS 2400 for Quad System display, all **Disabled** or **Disconnected** video Cameras are then displayed with an appropriate text message in the appropriate display area. Incidents to the contrary; that is, when the display is blank and without text, may indicate a break in the signal transmission and should be escalated to your system administrator immediately.

Positional Control of the Video Sources

Video cameras supporting Pan Tilt and Zoom (PTZ) control can be attached and positioned directly from the supported serial ports (COM 1 and COM 2). Furthermore, the AXIS 2400 can also control up to two external (standalone) PTZ devices for positioning fixed cameras on your system. All PTZ devices are steered via the AXIS 2400 Web interface, or TCP application if your Administrator chooses.

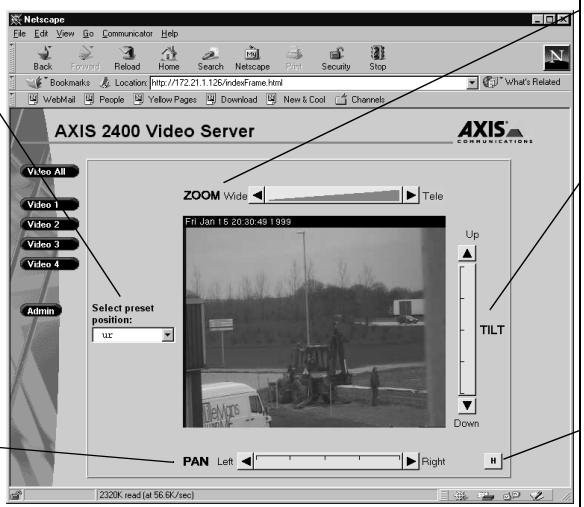
Using the Pan Tilt and Zoom Toolbars

Note: Pan Tilt control may not be available from the user interface, as this utility can be disabled by your system Administrator.

Clicking any image within your main user interface automatically opens a new window to display a corresponding single shot **Close up** image - with **Pan Tilt** and **Zoom** bars, as shown below:

Select Preset Position

To enable quick and accurate camera positioning, the Administrator can define within server memory, up to 20 preset camera positions. Presets positions are established and saved as named entities by your Administrator and can be re-established at any time from the drop-down dialog.



Zoom

Allows smooth and stepped camera zoom between telescopic and wide viewing.

Tilt

Allows smooth or stepped vertical panning of the camera. For details, refer to Camera Positioning (below).

Pan

Allows smooth or stepped horizontal panning of the camera.
For details, refer to Camera Positioning (below).

Home

Returns the camera to the default 'home' position. For details, refer to Camera Positioning (below).

Camera Positioning

Although very similar, the navigational functionality is slightly different for each of the available pan tilt drivers. The table below describes the basic positioning methods, and the level to which these are supported by the drivers available from the Administration pages:

Positioning method	Sony	Canon	Videmech	Ernitec	Pelco
Step: Click the left, right, up or down arrows within the positional toolbar to move the selected camera in 5^{o} steps (approx) in the chosen direction.	Yes	Yes	Yes	Yes	Yes
Smooth: Each positional toolbar represents the full viewing angle for the selected camera. Click anywhere along the toolbar to gently travel the camera to its equidistant position.	Yes	Yes	Yes	No	No
Click in picture: Click directly in the picture to define the central position of the selected camera.	Yes	Yes	Yes	No	No
Home: Click to move the camera to its home position, as defined by the pan tilt device.	Yes	Yes	Yes	No	No

Camera Zoom

In a fashion similar to that provided for positional control, the degree of camera zoom is controlled by clicking a scaled toolbar that represents the full tele-zoom potential for the selected device.

Click the left or right arrows within the toolbar for *stepped* increases for *Wide* and *Tele* zoom respectively. Clicking anywhere along the toolbar gently adjusts the level of camera zoom by a *variable* value predetermined by the device.

Note: Variable zoom control is not supported by the Pelco and Ernitec drivers

Defining Preset Positions

If your Administrator(s) has granted user(s) with ***Select Preset*** camera positioning rights, you can also control and record the camera the camera *angle* and create up to twenty preset positions that can be re-established at any time.

Follow the instructions below to define a preset a position:

1. Click the Preset Position button. An image taken from the selected source - at its current position - is displayed in a new window.
2. Using the **Pan Tilt** and **Zoom** control bars, move the camera to the desired position.
3. Enter a descriptive name in the **Current Position** field.
4. Click **Save** to register the new preset position with the AXIS 2400 and then check that the entered name is included in the **Preset Positions** drop-down list.
5. Click **Remove** only if you want to remove this or any other preset position in the list.

Appendix A - Troubleshooting

This appendix provides useful information to help you resolve any difficulty you might have with your AXIS 2400. Fault symptoms, possible causes and remedial actions are provided within a quick reference table.

The Log File

The AXIS 2400 Log file records commands executed within the unit and can prove a useful diagnostic tool when attempting to resolve any problems that might occur.

If you cannot resolve your problem after reading the information in this appendix or by referring to the AXIS 2400 FAQ, you can escalate the problem to the AXIS support desk. To help us resolve your problems expediently, please ensure to provide the following information:

- A brief description of the problem
- The log file
- The config file
- If relevant, an example of a poor image

See “Support Services” on page 2 on how to contact your local support center.

Obtaining the File

Follow the instructions below to display all Video Server commands executed since the last *Restart* of the system:

1. Click the Video Sever icon in the graphic interface.
2. **Click the View Log File** button. All Video Server commands executed since the last *Restart* of the system are displayed in a separate window.

Alternatively, obtain a copy of the log file, by typing the following command directly into the location/Address field (URL) of your Web browser:

```
http://<videoserv>/log/messages
```

Examining the File

The Log file can be examined directly using any text editor and typically contains the following information:

```
 Fri Apr 30 09:56:35 Info: Initialize video decoders
 Fri Apr 30 09:56:41 Info: Detection of color standard.
 Fri Apr 30 09:56:41 Info: Saa7111Decoder :: Found PAL BGHI/NTSC M.
 Fri Apr 30 09:56:41 Info: Detection of color standard.
Fri Apr 30 09:56:42 Info: Saa7111Decoder :: Found PAL BGHI/NTSC M.
 Fri Apr 30 09:56:42 Info: Initialize serial ports device Drivers
 Fri Apr 30 09:56:42 Info: serialHAL::mode : using RS232
 Fri Apr 30 09:56:42 Info: serialHAL::mode : using RS232
 Fri Apr 30 09:56:42 Info: Create TCP Generic, port 0
 Fri Apr 30 09:56:42 Info: Create Canon VC-C3, port 1
 Fri Apr 30 09:56:42 Info: Create Nulldriver, port 2
 Fri Apr 30 09:56:42 Info: Prepare for FTP/CRON image access
 Fri Apr 30 09:56:42 Info: Initialize Juliette chip
 Fri Apr 30 09:56:42 Info: Start script
 Fri Apr 30 09:56:42 Info: Start SoftWatchdog
 Fri Apr 30 09:56:42 Info: Create camera device port connection
```

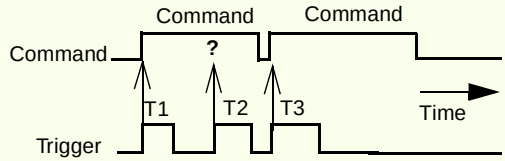
Typical AXIS 2400 Log File

Symptoms, Possible Causes and Remedial Actions

Symptoms	Possible causes	Remedial actions

The AXIS 2400 cannot be accessed from a Web browser.	The IP address is already used by another device.	Follow the instructions below to check that the IP address for your AXIS 2400 is unique:
		1. Start a DOS window.
		2. Type `ping x.x.x.x`, where x.x.x.x is the IP address of the AXIS 2400.
		The subsequent reply will provide an explanation as to the cause of the problem. The possible replies can be interpreted as follows:
		`bytes = 32 time = 2 ms.....`
		The IP address is already used and cannot be used again. You must obtain a new IP address.
		`destination host unreachable`
		The AXIS 2400 is not within a reachable network node. You must obtain a new IP address.
		`request timed out`
		This IP address is not used by anyone and is available for use with your AXIS 2400.

Symptoms	Possible causes	Remedial actions
	The IP address is located within a different subnet.	In Windows 95/98 or Windows NT, check that the IP address for your AXIS 2400 is within the same subnet as your workstation: 1. Click "Start", "Settings", "Control Panel" and "Network". 2. Specify the TCP/IP adapter and click on “Properties”. In Properties, click "IP Address". 3. Check that the first 3 numbers within the IP address of your AXIS 2400 matches the first 3 of your workstation. If not, your AXIS 2400 is in a different subnet and the IP address cannot be set from this workstation. You must then obtain a new IP address.
	In Windows 95, the ARP table was empty when you tried to set the IP address.	In Windows 95, the ARP command cannot be used if you have an empty ARP table. Type arp -a to view the ARP table. If it is empty, you must ping an existing unit on your network before you can down-load the IP address to the AXIS 2400 using ARP.
The programming script is not working.		Check that the programming script has been enabled.
The Power indicator is not constantly lit	Faulty power supply.	Verify that you are using an Axis PS-D power supply.
The Network indicator is not red.	Faulty cabling.	1. To verify that the cables work, ping the address of a known existing unit on your network. 2. If the cabling is OK and your network is reachable, you should receive the reply similar to this: `...bytes = 32 time = 2 ms,`
The Active and Network indicators are flashing every 0.5 seconds	Hardware failure.	Contact your Axis dealer.
Your AXIS 2400 works locally, but not externally.	Firewall protection	Check the Internet firewall with your system manager.
	Default routers required	Check whether you need to configure the default routers settings.
	The Internet site is too heavily loaded.	Use a script running on your web server to relay images from the AXIS 2400 to the Internet. This is particularly important when generating zoom and hugesize images.
No image using Refresh and/or Slow updating of snapshots using the Server push function.	Complex images, i.e. those containing great picture contrasts, have greater file size and thus place greater demand on the available file space within the AXIS 2400.	The memory constraints become significantly more acute if multiple clients try to access the same snapshot. Try limiting the number of clients.

Symptoms	Possible causes	Remedial actions
Triggering difficulties with programming scripts	Unable to triggering on both positive and negative transitions of the Control Button and/or IO ports (double-edged triggering).	Repetitive trigger conditions that occur in quick succession of one another can be missed. This is because the command initiated by the first trigger event may not have been fully executed prior to the second event. This scenario is demonstrated in the illustration below:  This feature has particular significance when using commands that take a relatively long time to process, e.g. mail or ftp, especially if they are conjugated with a loop statement. See also *Appendix H- The Programming Script*.
Bad snapshot images.	Display configured incorrectly on your workstation.	Within Display Properties, configure your display to show at least 65'000 colors, i.e. at least 16-bit. Using only 16 or 256 colors on your computer will produce dithering artifacts in the image.

Note: If you still have a problem after reading this information, you qualify for the "More than a minute program" which entitles you to a free gift for a registered installation requiring more than a few minutes. Please contact your reseller or check the FAQ should you require more assistance.

Appendix B - Updating the Software

The AXIS 2400 server software is stored in Flash memory. This memory is provided by a silicon chip that just like any other ROM device, retains data content even after power is removed. Flash memory is unique because it allows its data to be erased and re-written. This means that you can install software updates for your AXIS 2400 as soon as they become available - without having to replace any parts. New software can be simply loaded into the AXIS 2400 over the network.

Obtaining Updated Software

The latest version of the AXIS 2400 server software is available free of charge from Axis or your local distributor. You can obtain this software over the Internet or via anonymous FTP.

Over the Internet

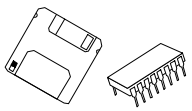
Simply follow the appropriate hyperlinks, starting with "Support" from within the AXIS 2400 Home Page, or enter **http://www.axis.com/techsup/cam_servers/cam_2400/** within the URL of your Web browser.

Typically, the software update file is called `2400_x_xx.exe`, where `x_xx` indicates the software version. This self extracting archive file unpacks the associated data and text files upon execution. It is recommended that you save this file in your root directory.

Anonymous FTP

Log in to ftp.axis.com and go to the **/pub/axis directory**. Download the software update file `2400_x_xx.exe`, where `x_xx` indicates the software revision. It is recommend that you save this file in your root directory. Proceed then by unpacking the .exe file to create the associated binary and text files.

Upgrading the Software



There are two methods for updating to the AXIS 2400 Flash memory:

- over the network using the AXIS ThinWizard
- over the network using FTP

Upgrading Using the AXIS ThinWizard

AXIS ThinWizard is a tool for locating, managing and upgrading AXIS ThinServer devices, including AXIS 2400 products. Supplied on the AXIS Online CD and Axis Website, it enables batch upgrading of several video servers simultaneously and is the recommended method for upgrading Axis products in TCP/IP networks.

Before you begin:

You must assign the AXIS 2400 with an IP address, as described in *Assigning an IP Address*, on page 12, before you can use this upgrading method.

Follow the instructions below to upgrade your video servers using AXIS ThinWizard:

1. Click the **Manage Network** button in the AXIS ThinWizard main menu.
2. Select a network group from the drop-down list. You can only update the servers that are included in the selected network group.
3. All AXIS servers included in the network group appear. Click the **Firmware** button to start the Upgrade Wizard.
4. Follow the instructions that are presented to you to complete the installation.

For more information about AXIS ThinWizard, refer to the Axis Website at **http://www.axis.com/**

Upgrading using FTP

Having obtained the upgrade software, install it into the AXIS 2400 by following the instructions below:

1. Reset the AXIS 2400 by powering it off and then on again.
2. Start an FTP session and log in to the AXIS 2400 as `root`, using the root password. By default this is set to `pass`.
3. Set FTP to binary mode using the command `bin`.
4. Download the new camera server software to you AXIS 2400 by using the command `put 240_1_00.bin flash`.
   This process takes 30 - 60 seconds. The LEDs will flash slowly during programming.

Note: If you need to force a download, e.g. when degrading to an older software, use the syntax `put 240_1_00.bin FLASH`

5. The AXIS 2400 will report `"Transfer complete, flash programming finished OK"`, once the programming is complete.

Caution!

In controlled environments, Flash memory upgrades provide a very safe method for updating software. However, Flash products may easily become damaged if this operation is left to inexperienced persons. Units that become damaged due to misuse will need to be sent back to your dealer who in such circumstances, may charge for any necessary repairs. Therefore, it is highly recommended that Flash memory upgrades are performed by persons knowledgeable in this area.

Appendix C - Technical Specifications

System Requirements - The AXIS 2400 uses the standard Internet TCP/IP suite ofh protocols and can be used with most operating systems: Windows 95, 98 and NT as well as Linux, UNIX, Mac and several others. The only software required is an Internet browser, Netscape 4.x or Internet Explorer* 4.x, or higher. *Requires AXIS Camera Control Software.

Installation - Physical network connection using RJ45 twisted pair cable. Installs directly to NTSC or PAL video cameras using BNC connectors. Use as a standalone system or as an add-on to existing CCTV systems.

Management - Remote configuration and status using Web-based tools.

Compression - Motion-JPEG, as well as single snapshot JPEG images. User controlled compression level.

Video Features - Time stamp and text overlay. Color control (B/W or color).

Video Inputs - Four BNC composite video inputs with 75ohm/Hi Z termination. Autosensing for NTSC and PAL.

Networking - 10baseT Ethernet or 100baseTX Fast Ethernet, TCP/IP, HTTP, FTP, SMTP, NTP, ARP, BOOTP.

General I/O - 4 optical-isolated alarm inputs and 1 output relay (max 24V, 0.1 A) supplied on a single terminal block connector. Programmable inputs for remote image storage via File Transfer Protocol (FTP) or E-mail (SMTP), pre/post alarm image storage.

Pre/Post Alarm Buffer - Up to 8 MByte memory available for pre/post alarm image storage.

Serial Connectors - 9 pin D-SUB RS-232 max 230 Kbps, 9 pin D-SUB RS-232 or RS-485/422 max 38.4 Kbps, half duplex

Pan/Tilt/Zoom - PTZ support for remote camera control. Currently supported units and protocols include: Ernitech ICU 51PA, Sony EVI-G20/21, EVI-D30/31 and Canon VC-C3. Future support for other PTZ units.

Security - User level password protection.

Operating Conditions: - Temp: 40-125×F (5-50×C), Humidity: 20-80% RHG.

Approvals - EMC: FCC Class A, CE:EN 55022/1987,EN50082- 1/1992
Safety: EN 60950, UL, CSA.

CE

Metrics: - Height: 1.7" (4.2 cm), Width: 5.7" (14.5 cm), Length: 8.7" (22.0 cm), Weight: 1.7 lb. (0.8 kg), excl. psu.

Hardware - ²ARTPEC-1 compression chip, ERAX-100, 32 bit RISC, 100 MIPS CPU, 16 Mbyte RAM, 2 Mbytes FLASH PROM.

Power - 3 alternative power sources: External power supply 12V AC, 9.6 VA (PS-D, included), 9-20V AC, min 10VA, 6-30V DC, min 7W

Complimentary Software - AXIS IP Installer - for quick installation of multiple units, AXIS Thin Wizard - remote upgrade of multiple Axis units. AXIS Camera Control (Axis' ActiveX component software required for Microsoft Internet Explorer)

ThinSever Technology - Incorporating Axis ThinServer Technology, the AXIS 2400 comprises: "thin" versions of the most popular network operating systems, Web management tools, and Axis' own ETRAX 32-bit RISC processor based on open architecture, streamlined and optimized for device connectivity independent of any file server.

Performance - The AXIS 2400 delivers the following filesizes:

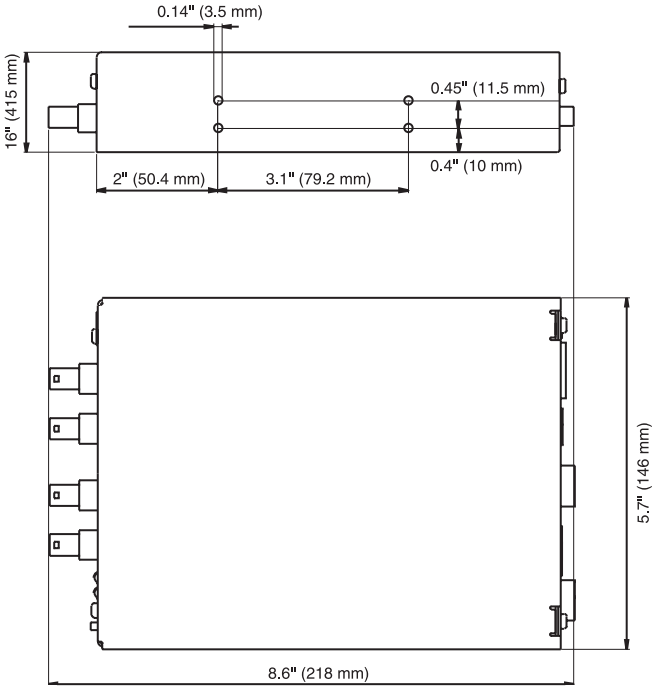
NTSC			PAL		
Resolution	**Filesize (kB)**	**Max fps***	**Resolution**	**Filesize (kB)**	**Max fps***
704 x 480**	7 - 150	10	704 x 576**	8.5 - 180	8
352 x 240	1.4 - 40	30	352 x 288	1.7 - 50	25
176 x 112	0.3 - 10	30	176 x 144	0.4 - 12	25
Quad (4 x 352 x 240)	7 - 150	5***	Quad (4 x 352 x 288)	8.5 - 180	5***

* Maximum performance given single user and only one video source in use.

** Interlaced image

*** Quad image, images from all four video sources integrated into one single image.

Dimensions -



All specifications are subject to change without prior notice.

Appendix D - The RS232 Interface

As a complement to the information provided in *Pan Tilt Settings,* on page 31, this appendix discusses the functionality of the RS232 serial interface and provides detailed instructions on how to install a standalone Pan/Tilt device to the AXIS 2400 Video Server.

Important!

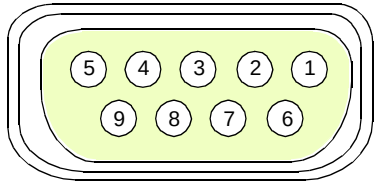
The Videmech driver is the only External Pan Tilt device (standalone device connecting to a fixed video camera without inherent PTZ support) supported directly by the AXIS 2400. Unless stated to the contrary, Pan Tilt devices are assumed to be in-built within the video camera where referred to in this document.

Two 9 pin D-sub connectors provide the physical connection for the RS232 serial interface of the AXIS 2400. These connectors are provided for connecting accessory equipment; typically standalone Pan/Tilt devices for remote positioning of connected video cameras.

The Physical Connector

A diagram of an RS232 connector and the AXIS 2400 pin assignment table are detailed below.

Pin	COM1 Function	COM2 Function
1	NC	CD
2	- RXD	- RXD
3	- TXD	- TXD
4	RTS	DTR
5	GND	GND
6	DSR	DSR
7	RTS	RTS
8	NC	CTS
9	NC	RI



Notes: The pinout is different for each supported serial port

NC = Not connected

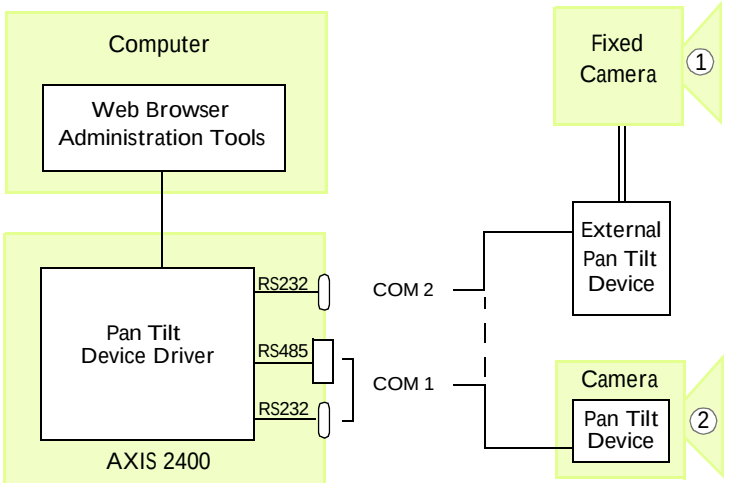
Camera Positioning

The AXIS 2400 can control the position of connected cameras in three different ways:

- ***Pan Tilt Control using the Web Administration Tools:*** where, the position of the selected video camera is controlled using a standard Web browser.
- ***Generic Control using CGI parameters:*** enter the positioning data as a CGI command directly into your Web browser Location/Address (URL).
- ***Generic control using a TCP client:*** using a TCP client-application to control the position of the chosen camera.

Installing Pan/Tilt Devices

The diagram below illustrates how the AXIS 2400 connects to your workstation, video cameras and relative Pan Tilt Device. ① A fixed camera can be positioned remotely by using an External Pan Tilt device. ② A PTZ-supported camera is connected directly to the COM 1 or COM 2 ports directly.



Follow the instructions below to install a Pan/Tilt device:

1. Attach the Pan/Tilt device to the Pan/Tilt port of the AXIS 2400 using an RS232 cable.

Note: It is also possible to connect a Pan Tilt device via the RS485 port. See *Appendix F - The IO Terminal Block* for details.

2. On the AXIS 2400 Home Page, click **Settings**. You will be prompted to supply a username and password. By default, these are set to root and pass.
3. Click **Pan/Tilt**.
4. Click **Driver.** Select the driver that corresponds to your Pan/Tilt device from the drop-down menu. Click **Store driver.**

Supported Pan Tilt Drivers

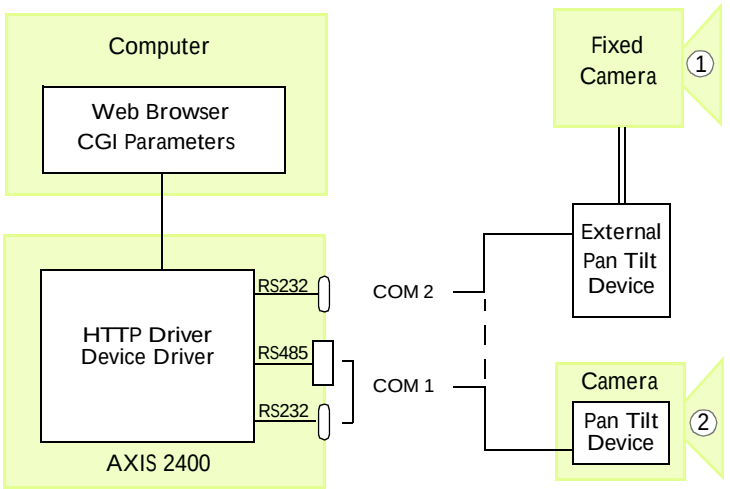
A comprehensive list of supported drivers with their associated settings is provided below:

Driver	Settings
Canon Only one camera can be connected.	• No settings
Sony G20/G21/D30/D31 Up to three devices can be connected.	• Select the deviceID corresponding to the device connected to the camera.
Videmech Up to four devices can be connected, either directly to the RS485 connector in the terminal block or via an RS485 adapter in a RS232 port.	• Serial Address: This is the address of the head connected to the camera(1-255). Please note that the address 255 is reserved for broadcast, i.e all the connected heads will receive commands sent to this address. • • Movement limits: These limits indicate the end positions in all directions; i.e left, right, up and down. The limits will assure that the head is kept within certain bounds. Use if there is any obstructions to head movements. • • Zoom and focus limits: These limit indicates the end position for focus and zoom. In order not to stall the motors when approaching the mechanical end positions of your lens, it is very important that you limit the wide/tele interval in accordance. • • Zoom and focus enabled: If you do not have a zoom and/or focus lens uncheck these boxes in accordance. • Optical Data: The MaxDeg setting should correspond to the viewing angle at max wide, the MinDeg setting should correspond to the angle at max tele.
Ernitec Up to four devices can be connected, either directly to the RS485 connector in the terminal block or via an RS485 adapter in a RS232 port.	• Input the deviceID corresponding to the device connected to the camera(1-255).
Pelco Up to four devices can be connected, either directly to the RS485 connector in the terminal block or via an RS485 adapter in a RS232 port.r.	• Input the deviceID corresponding to the device connected to the camera (1-255).

Note: Setting the Pan Tilt Address to 255 implies that the control signals will be broadcast to all the connected Pan/Tilt devices.

Pan Tilt using HTTP

The AXIS 2400 supports input/output operations on the Pan/Tilt port via the HTTP protocol. The functionality can be used for adjusting the video camera position **or** for controlling a simple device, such as a relay switch. The schematic diagram below illustrates the logical elements for such a configuration:.



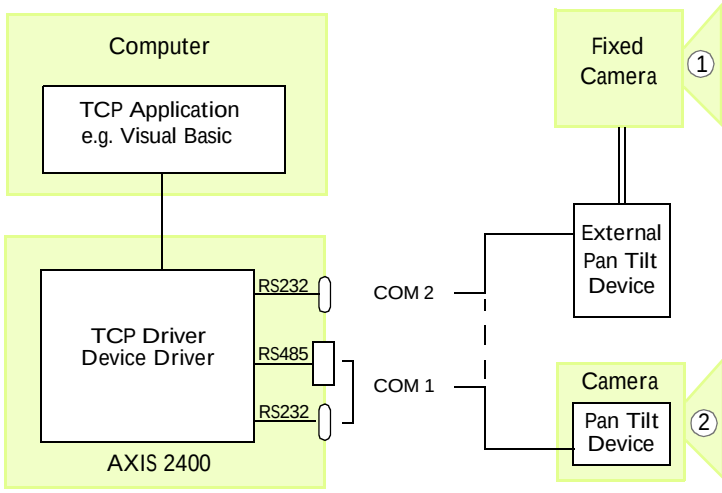
Follow the instructions below to configure Pan Tilt for use with the HTTP protocol:

1. Click the **Generic** icon within the graphic user interface.
2. Set the HTTP radio button.
3. Click **Save**.

The Pan/Tilt port is now enabled for input/output operations via HTTP. Refer to *Appendix E - CGI Parameters* for a list of the CGI parameters you can use.

Pan Tilt using the TCP Protocol

Instead of using a specific Pan/Tilt driver, the camera position can be controlled using a TCP client application such as Visual Basic. The schematic diagram below illustrates the logical elements for such a configuration:.



To enable TCP input/output operations on the Pan/Tilt port, follow these steps:

Follow the instructions below to configure Pan Tilt for use with the HTTP protocol:

1. Click the **Generic** icon within the graphic user interface.
2. Set the TCP radio button.
3. Define the appropriate port number TCP Port number for *Raw TCP* or *Reverse Telnet* (normally default to 9100). Otherwise, proceed to step 3.
4. Click **Save**.

Note: your TCP client application must also use this TCP port when communicating with the AXIS 2400.

The Pan/Tilt port is now enabled for input/output operations via HTTP. Refer to *Appendix E - CGI Parameters* for a list of the CGI parameters you can use.

Appendix E - CGI Parameters

The Common Gateway Interface (CGI) is a standard for interfacing external applications with information servers, such as HTTP or Web servers. A CGI program within the AXIS 2400 allows you to define special video image features within an embedded URL request.

You generate CGI parameter requests in the form of query strings appended to the URL of the AXIS 2400. You can also use CGI parameters for simple HTTP input/output operations on the Pan/Tilt port.

CGI Parameters for Snapshot Requests

For snapshot requests, use this syntax:

```
http://<servername>/cgi-bin/<imagefile>?
<parameter>=<value>[&<parameter>=<value>...]
```

This table lists the CGI parameters for snapshot requests:

Parameter/Syntax	Description	Values
camera=<n>	Selects the source for generating snapshots. If omitted, the default camera is used.	1,2,3 or 4
compression=<value>	Adjusts the image quality and file size.	1-4, where: 1= minimum, 2=low, 3=medium, 4=high
color=<value>	Selects color or grayscale.	0 or 1; where: 0=grayscale, 1=color
clock=<value>	Shows/hides the time stamp.	0 or 1; where: 0=off, 1=on

Example 1

Request a fullsize JPEG snapshot from the default camera connected to the AXIS 2400 `videoserv` that contains a clock reference:

```
http://videoserv/cgi-bin/fullsize.jpg?clock=on
```

Example 2

Request a highly compressed hugesize JPEG snapshot from the camera connected to VIDEO 2 on `videoserv`:

```
http://videoserv/cgi-bin/hugesize.jpg?camera=2&compression=2
```

CGI Parameters for Pan Tilt and Zoom Control

Use the following syntax for creating CGI parameters to control Pan Tilt devices:

```
http://<servername>/cgi-bin/control?
<parameter>=<value>[&<parameter>=<value>...]
```

This table lists the CGI parameters for Pan Tilt requests:

Parameter/Syntax	Description	Values
move=<x>	Moves the Pan/Tilt device 5 degrees in the specified direction.	up/down/left/right/home
pan=<n>	Pans the Pan/Tilt device <n> degrees relative to the home position.	-180 ... 180
tilt=<n>	Tilts the Pan/Tilt device <n> degrees relative to the home position.	-180 ... 180
rpan=<n>	Pans the Pan/Tilt device <n> degrees relative to the current position.	-180 ... 180
rtilt=<n>	Tilts the Pan/Tilt device <n> degrees relative to the current position.	-180 ... 180
zoom=<n>	Adjusts the camera zoom to the specified angle.	1 ... 999 where 1is full zoom out

Note: The CGI parameters that adjust the camera position are only applicable when using one of the supported Pan/Tilt devices. Refer to the Pan/Tilt documentation on how to define the camera home position.

Example

Move the camera connected to VIDEO 3 on `videoserv` 45 degrees to the right:

```
http://videoserv/cgi-bin/control?camera=3&pan=45
```

CGI Parameters for Input/Output Operations

For HTTP input/output operations on the Pan/Tilt port, use this syntax:

```
http://<servername>/cgi-bin/control?<parameter>=
<value>[&<parameter>=<value>...]
```

This table lists the CGI parameters for input/output operations

Parameter/Syntax	Description	Values
dataout=<string>	Writes the specified data string to the Pan/Tilt serial port. Maximum 128 bytes.	Hexadecimal coded bytes {0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F, a, b, c, d, e, f}
read=<n>	Reads the specified number of bytes from the Pan/Tilt port. The returned value will be hexadecimal coded and placed between #'s, e.g. #3A#.	1 ... 128
wait=<n>	Waits the specified number of seconds before reading from the Pan/Tilt port. Used together with the "read" parameter.	1 ... 9
flush=<value>	Empties the input buffer for the Pan/Tilt port. Always performed first when combined with other parameters.	yes/no

Example 1

Write the data stream 430001FF to the Pan/Tilt port:

```
http://videoserv/cgi-bin/control?dataout=430001FF
```

Example 2

Clears the input buffer, writes the data string 2B004C4C4F to the Pan/Tilt port and waits 5 seconds for a reply. The AXIS 240 will return a value to the Web browser:

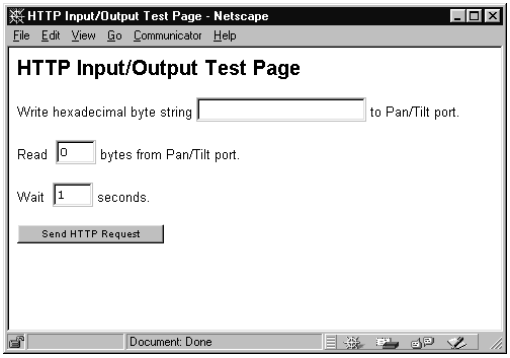
```
http://videoserv/cgi-bin/control?flush=yes&dataout=2B004C4C4F&wait=5&read=20
```

Example 3

An HTML page for reading and writing to the Pan/Tilt port:

```
<HTML>
<HEAD>
<TITLE>HTTP Input/Output Test Page</TITLE>
</HEAD>
<BODY>
<H2>HTTP Input/Output Test Page</H2>
<FORM ACTION="http://videoserv/cgi-bin/control" method=post>Write
hexadecimal byte string 
<input type=text size=20 maxsize=19 name="dataout"> to Pan/Tilt port.
<P>Read  <input type=text name=read value="0" size=4> bytes from
Pan/Tilt port.
<P>Wait  <input type=text name=wait value="1" size=4> seconds.
<P><input type=submit name="Send" value="Send HTTP Request"></FORM>
</BODY>
</HTML>
```

In a Web browser, the page will look like this:


HTTP Input/Output Test Page - Netscape
File Edit View Go Communicator Help
HTTP Input/Output Test Page
Write hexadecimal byte string
to Pan/Tilt port.
Read 0 bytes from Pan/Tilt port.
Wait 1 seconds.
Send HTTP Request
Document: Done

CGI Parameters for Preset Positions

For preset position requests, use this syntax:

```
http://<servername>/cgi-bin/control?presetposname=<position name>
```

It is also possible to use an index number instead of the preset position name:

```
http://<servername>/cgi-bin/control?presetposno=<1-10>
```

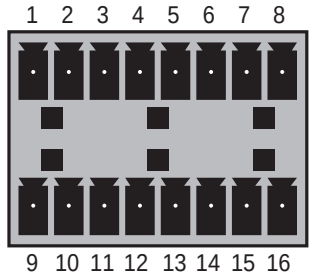
Note: It may take a few seconds for the camera to adjust itself to the new position but the snapshot is taken immediately. Therefore you need to update the snapshot in the application after a while.

Appendix F - The IO Terminal Block

A 16-pin terminal block connector is provided for auxiliary IO connections to the AXIS 2400. This appendix describes the additional functionality that this port provides.

Physical Connection

The Terminal Block connector provides the interface to one relay switch output, four digital photo-coupled inputs, RS 485 interface and auxiliary power.



Connector Pinout

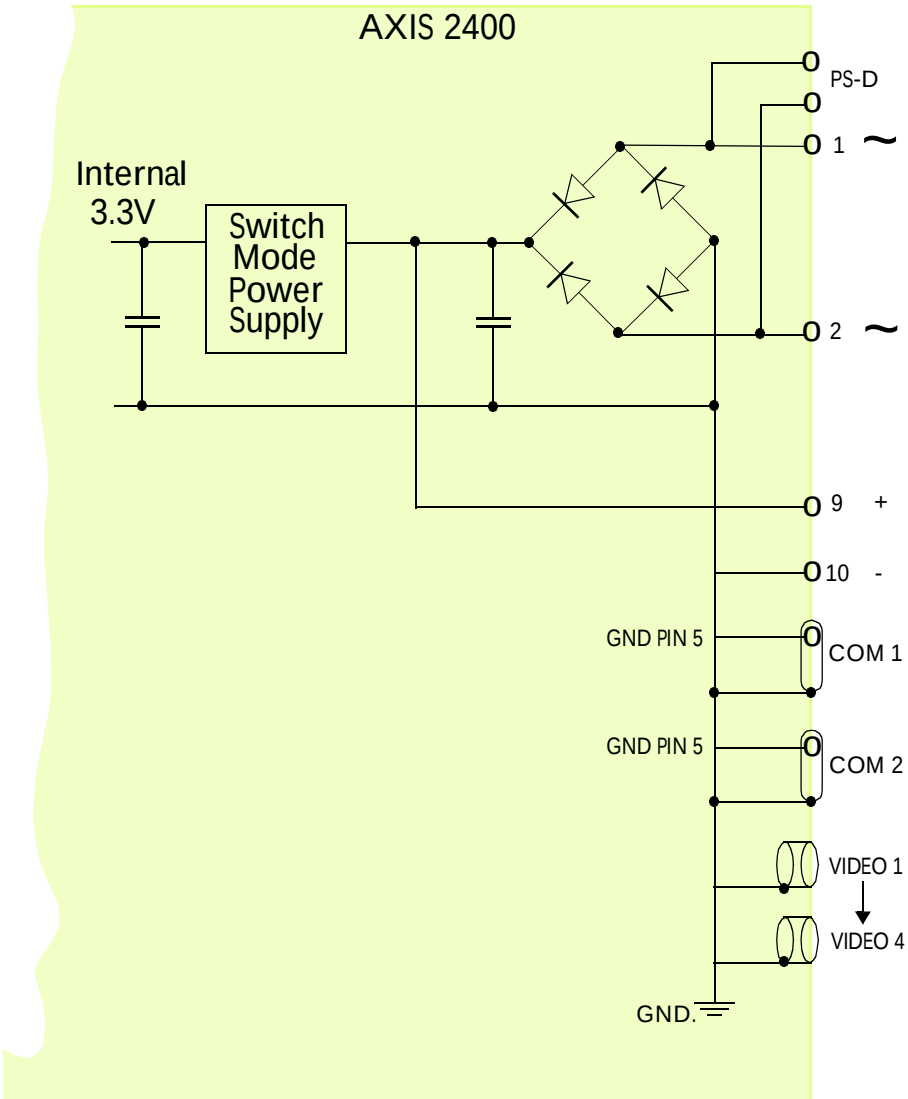
A diagram for the auxiliary IO connector and a pinout table are detailed below

Pin	Function	Description
1	Auxiliary AC Power Input	Electrically connected in parallel with PS-D power connector, pins 1 & 2 provide an auxiliary connector for mains power to the unit.
2	Auxiliary AC Power Input	
3	Input 3 - Photocoupler Anode (+)	Photocoupled Input 3: Electrically isolated from the chassis and connectors, this input can be supplied from an external DC voltage or the DC Power Input/Output on pins 9 and 10.
4	Input 3 - Photocoupler Cathode (-)	
5	Input 4- Photocoupler Anode (+)	Photocoupled Input 4. As above.
6	Input 4 - Photocoupler Cathode (-)	
7	RS 485 - B	Serial Port1- RS485. A half duplex RS485 interface for controlling auxiliary equipment. **Note:** Serial Port 1 is programmed as either RS232 (COM1 Connector) or RS485 (Terminal Block Connector), via the Web browser interface.
8	RS 485 - A	
9	DC + Power (Input or Output)	DC Power Input or Output: Used as an input, it supplies the Axis 2400 via a DC source; for example. a solar panel or a battery. As an output, it can drive the photo coupler inputs or other equipment; such as an IR-sensor. The output voltage level is dependent upon the input voltage to the unit. A maximum current of 50mA can be sourced from the DC output. Pin 10 is connected to unit chassis, and Ground on each serial port and video input. See circuit diagram (below).
10	DC - Power (Input or Output)	
11	Input 1 - Photocoupler Anode (+)	Input 1 Photo coupler input. As Input 3.
12	Input 1 - Photocoupler Cathode (-)	
13	Input 2 - Photocoupler Anode (+)	Input 2 Photo coupler input. As Input 3.
14	Input 2 - Photocoupler Cathode (-)	
15	Relay Switch	Relay switch. Electrically isolated from chassis and connectors.
16	Relay Switch	

Note: Axis do not provide application software for this connector, but encourage Administrators and development partners to configure their own applications and determine how this connector is best utilized. We would be particularly pleased to learn of any interesting applications that you might develop!

For compatible replacement connectors, contact http://www.phoenixcontact.com, quoting: MC1.5/8-ST-3.81 (art no 1803633)

Power and Ground



Controlling and Monitoring

IO Files

The status of the input/output interface can be monitored and controlled by the IO software within your AXIS 2400. From your Web browser, you can access the IO control file in order to either drive the relay output or monitor the status of the digital inputs.

To access the IO file, enter the following URL:

```
http://videoserv/io?relay=check/
```

You will require `root` access to reach these files and will now be asked to supply a username and password. Login as `root` and supply the root password (default = `pass`).

Once access is granted, the following files are displayed:

```
relay=on
relay=off
input.txt
```

Relay Output

You can use the relay output to drive directly a maximum load of 24V AC/DC at 100mA. By connecting additional relay circuitry, you can also use this output to drive heavier loads.

You can drive the relay off and on simply by clicking `relayoff.txt` or `relayon.txt` in the above URL. Clicking on either of these will return either of the following messages, respectively:

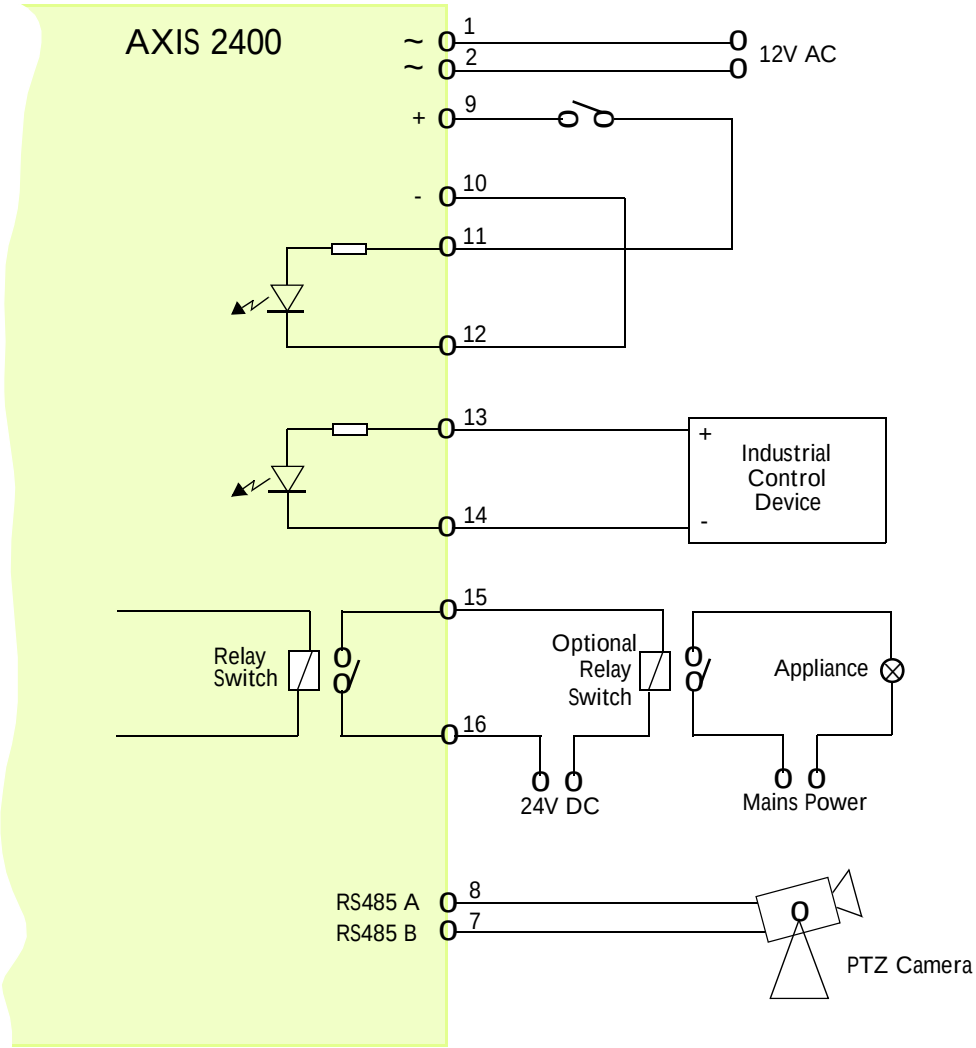
```
Relay is Off
Relay is On
```

Note: You can also control the relay switch using a preprogramming that includes the snapshot command.

Digital Inputs

The four digital inputs make it possible to trigger your snapshots on chosen events. However, you must use a preprogramming script to implement this functionality. See "CRON Script" on page 53.

By connecting a digital microcircuit to a particular door for example, it is possible to take a snapshot on each occasion that it opens or closes.



Schematic diagram of the AXIS 2400 Auxiliary Connector - displaying a possible application

Appendix G - Camera Applications

The AXIS 2400 offers living video over the network for enhancing and modernizing traditional CCTV and video surveillance systems... and much more.

Whereas traditional security systems often limit camera access to a specific monitor; the AXIS 2400 allows industrial and security surveillance over a secure intranet network and even allows you to broadcast live images over the Internet. You can now monitor operations remotely from within the comfort of your own home, corporate headquarters; or indeed, from any workstation of your choosing that supports a Web browser. Just think... no more late trips to the factory to investigate problems!

This section provides a detailed description of each preconfigured application available within the Layout and Configuration Wizard and several client application ideas that will be of interest to Administrators developing their own applications.

Wizard Preconfigurations

There are currently two Layout and Preprogramming applications available. The Application Wizard guides you through the configuration procedure and helps you to define the functionality of your application and general look-and-feel of the user interface. You initially choose from Surveillance System or Web Attraction preconfigurations and then refine the application specifically to your needs by selecting from several of the available features in the Wizard.

Surveillance System - Provides a typical surveillance design; including: Quad system with or without pre/post alarm storage, Pan Tilt Zoom control and preset, variable picture size and magnification parameters. Aesthetic aspects of system presentation; such as, background, logo, user button and product title presentation, are also configurable.

Web Attraction - A basic system design that delivers a standard picture system - without the alarm and control features provided by of the former. Aesthetic aspects of system presentation; such as, background, logo, user button and product title presentation, are configurable.

Client Applications

Aside from the preconfigured applications included as standard in the AXIS 2400; there are a whole host of other exciting applications that have already been developed, tested and implemented by other developers using Axis' Network products.

Typical applications include: security surveillance in banks, parking lots and conference rooms, industrial surveillance, visual security systems, medical applications, intruder alarm verification, traffic surveillance, image archiving, integrating video images into personal Web application using CGI scripts, fun applications etc. SMTP e-mail support means that you can even send images as e-mail attachments at predetermined times or events.

Note:

- Take the time to look at the what other organizations in the industry are doing with Axis' network cameras. Visit Axis' dedicated CCTV Website at: **http://cctv.axis.com/**
- **Network Camera Servers Developer's Pages:** The Camera Division at Axis maintain a specialist site for network camera developers. New exciting application ideas, tools, and preprogramming scripts are constantly being added - this is an invaluable reference site for Axis' development partners and OEMs. Follow the camera links and check it out at: **http://www.axis.com/**

Appendix H- The Programming Script

Administrators and developers wishing to create a special level of customization within their applications can create their scripts using a the product scripting language in an ordinary text editor. This appendix details the AXIS 2400 pre-programming commands within the context of genuine scripts that have been created, tested and implemented into proper user applications.

Note: Network Camera Servers Developer's Pages: The Camera Division at Axis maintain a specialist site for network camera developers. New exciting application ideas, tools, and programming scripts are constantly being added - this is an invaluable reference site for Axis' development partners and OEMs. Follow the camera links and check it out at: http://www.axis.com/

Script Format

A programming script for the AXIS 2400 can include one or several entries. The programming script entries use this format:

```
# <comments>
<triggering condition> :
<commands>;
%
```

where:

- The <comments> are optional.
- The <triggering condition> includes the following fields: <minute> <hour> <day> <month> <weekday> <optional input/boot event>
- The <commands> include one or several programming script commands.

Commands

alert

The alert command sends a message to a remote host.

Syntax

alert [-host HOST] [-port PORTNUMBER]
[-message STRING];

Options

`-host` Specifies the host name or IP address of the remote host.

`-port` Specifies the TCP port number in the range [0..65534].

`-message`

Specifies the message that will be sent to the remote host. The message must be surrounded by quotation marks. Hexadecimal coded messages must be preceded by \0x, e.g. "\0x04" for the non-printed character EOT. To include a quotation mark, it must be preceded by a backslash, e.g. \".

Example

```
# This command will send the message "Alarm
# "0013" from AXIS 2400" to the remote host when
# input port 1 goes high.
* * * * * /1:
alert -host 172.16.253.80 -port 2703 -message "Alarm \"0013\" from AXIS 2400";
%
```

buffer_init

The buffer_init command initiates or clears the image buffers. This is needed in order to store images using the buffer_start and buffer_stop commands.

Syntax

buffer_init [[CAMERANUMBER],[IMAGE],[SIZE][:[CAMERANUMBER],[IMAGE],[SIZE]]];

Options

CAMERANUMBER

Specifies the camera source, i.e. 1-5.

IMAGE

Specifies the image type 1-3, where:

1 = halfsize.jpg
2 = fullsize.jpg
3 = hugesize.jpg

SIZE

Specifies the maximum number of images that can be stored in the buffer. Valid range is 0-255.

To initiate several buffers, you can stack multiple statements separated by colon.

Note: To clear the image buffer, you simply do not specify any arguments.

To initiate several buffers, you can stack multiple statements separated by colon.

Example 1

```
# At startup, this command will initiate one
# buffer for camera 1 with 25 fullsize.jpg images
# and one buffer for camera 2 with 5 hugesize.jpg
# images.
* * * * * BOOT:
buffer_init 1,2,25:2,3,5;
%
```

Example 2

```
# This command will clear the buffer every Sunday.
0 0 * * 0 * :
buffer_init;
%
```

buffer_start

The buffer_start command stores snapshots in a specific image buffer. Before the command can be used, the buffer facility must be initiated using the buffer_init command.

When invoked, the buffer_start command is executed in the background. Any subsequent command in the event entry will be executed immediately.

To retrieve the stored images, specify the source using this syntax:

```
http://<videoserver>/images/buffer.jpg?imagetype=<value>
```

Example:

```
http://videoserv/images/buffer.jpg?imagetype=fullsize.jpg
```

You can also retrieve the images using the mail or the ftp commands.

Syntax

```
buffer_start [-src SOURCEFILE] [-cam CAMERANUMBER]
[-interval TIME] [-duration TIME] [-store SIZE];
```

Options

-src Specifies the source file name, i.e. halfsize.jpg, fullsize.jpg or hugesize.jpg.

-cam Specifies the camera source, i.e. 1-5. If omitted, the default camera will be used.

`-interval`

Specifies the time interval between consecutive snapshots. If omitted, new snapshots will be generated without any delay. Format: h<hours>m<minutes>s<seconds>.

`-duration`

Specifies the total time for the command to run. If omitted, the buffer_start command will be issued only once. Format: h<hours>m<minutes>s<seconds>. If you specify -duration inf , the command will continue to be executed until it is interrupted by any of the commands buffer_init, buffer_start or buffer_stop.

`-store`

Specifies the number of images to be stored in the buffer. This setting will override the duration. The maximum number of images is specified by the buffer_init command.

Example 1

```
# This command will keep loading fullsize.jpg images.
* * * * * * :
buffer_start -src fullsize.jpg -cam 3 -interval s30
-duration inf;
%
```

Example 2

```
# When someone presses the Control button, this
# command will store 10 hugesize.jpg images.
* * * * * /B :
buffer_start -src hugesize.jpg -store 10;
%
```

Example 3

```
# At startup, the buffer is initialized to hold 15
# fullsize.jpg images. New images are captured once
# every second until another buffer_start or
# buffer_stop command is issued.
* * * * * BOOT :
buffer_init 1,2,15;
buffer_start -src fullsize.jpg -interval s1 -duration inf;
%
# When port 1 is triggered, additional 5 images are
# captured before the buffer is locked. All the
# images in the buffer are then sent in an e-mail to
# someuser@somehost.com. Finally the buffer is
# restarted.
* * * * * /11:
buffer_stop -src fullsize.jpg -store 5;
mail -s "Buffered images" -a images/buffer.jpg -t someuser@somehost.com -b
fullsize.jpg -n 15;
buffer_start -src fullsize.jpg -interval s1 -duration inf;
%
```

buffer_stop

The buffer_stop command ends the storing of snapshots in an image buffer. Until completed, the buffer_stop command will block the execution of any subsequent commands in the event entry. Note that the buffer_start command behaves differently.

The command is typically used together with the buffer_start command.

Syntax

buffer_stop [-src SOURCEFILE] [-cam CAMERANUMBER]
[-interval TIME] [-duration TIME] [-store SIZE];

Options

-src Specifies the source file name, i.e. halfsize.jpg, fullsize.jpg or hugesize.jpg.

-cam Specifies the camera source, i.e. 1-5. If omitted, the default camera will be used.

`-interval`
Specifies the time interval between consecutive snapshots. If omitted, new snapshots will be generated without any delay. Format: h<hours>m<minutes>s<seconds>.

`-duration`
Specifies the total time for the command to run. If omitted, the buffer_start command will be issued only once. Format: h<hours>m<minutes>s<seconds>. If you specify -duration inf , the command will continue to be executed until it is interrupted by a buffer_init command.

`-store`

Specifies the number of images to be stored in the buffer. This setting will override the duration. The maximum number of images is specified by the buffer_init command.

Example

```
# This command initiates the buffer to hold 60
# halfsize.jpg and 5 hugesize.jpg images. New images
# are captured until the buffer_start command is
# interrupted.
* * * * * BOOT :
buffer_init 1,1,60:1,3,5;
buffer_start -src halfsize.jpg -interval s1 -duration inf;
buffer_start -src hugesize.jpg -interval m1 -duration inf;
%
# When port 1 is triggered, an alert message is sent
# to host 1.2.3.4. Another 10 halfsize.jpg images are
# captured and all the images are sent to an ftp
# server with the names "Halfsize_1" to
# "Halfsize_60". Then the buffer is restarted.
* * * * * /11:
alert -host 1.2.3.4 -port 4000 -message "Alert! Input on port 1.";
buffer_stop -src halfsize.jpg -store 10;
ftp -host somehost -user USER -pass PASS -src images/buffer.jpg -dest
Halfsize_$r1-60 -time
h1 -buffer halfsize.jpg;
alert -host 1.2.3.4 -port 4000 -message "Alert! Images sent to ftp server";
%
# When port 2 is triggered, the 5 most recent
# hugesize.jpg images are sent to an ftp server
# with the names "Picture_1" to "Picture5". Note that
# the buffer is not stopped.
* * * * * /12:
ftp -host somehost -user USER -pass PASS -src images/buffer.jpg -dest
Picture_$r1-5 -time h1
-buffer hugesize.jpg;
%
```

ftp

The ftp command uses the standard File Transfer Protocol (FTP) for transferring an image from your AXIS 2400 to a remote host.

Note: The ftp command keeps the connection open during each file transfer.

Syntax

```
ftp   [-host HOST] [-user USERNAME] [-pass PASSWORD]
[-src SOURCEFILE] [-dest DESTINATIONFILE]
[-temp TEMPORARY_DESTINATION_NAME] [-loop LOOPTIME]
[-time TOTALTIME] [-cam CAMERANUMBER]
[-buffer BUFFERTYPE];
```

Options

`-host` Specifies the name or IP address of the remote host. If specifying the name, performance will be slightly decreased due to the DNS lookup. If no host is specified, the compiler will complain.

`-user` Specifies the user name for logging on to the remote host. If no user name is specified, the compiler will complain.

`-pass` Specifies the password for logging on to the remote host.

`-src` Specifies the source file name. If omitted, the fullsize.jpg file will be sent. To include the image buffer, specify images/buffer.jpg.

`-dest` Specifies the name and whole path of the destination file. If omitted, the destination file name will be the same as the source file name. The maximum length of a destination file name is 255 characters. You can add as many destination files as required, separated by a space.

You can add time stamps, such as time, date and file indexes, to the destination file name. This is useful for example when you are transferring a series of files.

The following table lists the available time stamp variables. Every substitution must be proceeded by a dollar sign “$”.

$s
The current second in the range 00-59.

$m
The current minute in the range 00-59.

$h
The current hour in the range 00-23.

$d
The current day of the month in the range 01-31.

$n
The current month in the range 01-12.

$y
The current year without the century in the range 00-99.

$Y
The current year including the century.

$rS-E
Inserts an index number starting from number S through all the numbers including the number E. If you leave out number E, it will be interpreted as a very large number. **Note:** The rS-E substitution can be used with the first destination file only.

`-temp` Specifies a temporary name for the destination. This is to prevent someone else from accidentally reading the file during the download.

`-loop` Specifies the time interval within which the command should be repeated. Used together with the time attribute. If omitted, there will be no delay between repeated transfers. Format: h<hours>m<minutes>s<seconds>. Optional.

`-time` Specifies the total time the command should loop. Used together with the loop attribute. If omitted, the ftp command will be issued only once. Format: h<hours>m<minutes>s<seconds>. Optional.

`-cam` Specifies the camera source, i.e. 1 - 5. If omitted, the default camera will be used.

`-buffer`
Specifies the buffer type, i.e. fullsize.jpg, halfsize.jpg or hugesize.jpg. Only valid if -src is set to images/buffer.jpg.

Additional Options

In addition to the options described above, the following optional settings are also available:

-ctrlport
Specifies the TCP port number in the range [0..65534] to be used as the control port for the FTP server.

`-dataport`
Specifies the TCP port number in the range [0..65534] to be used as data port for the FTP server.

`-to` Specifies the timeout, i.e. the FTP session will terminate when the specified time limit has expired. Format: h<hours>m<minutes>s<seconds>.

However, these options can only be used via a text editor.

Example 1

```
# This command will log in as "elvis" with the
# password "presley" on the host with the Internet
# address 123.123.123.123, download a hugesize
# image with the name "king.jpg" and put
# it in the directory "/home/elvis" on the remote
# host. During download, the file name "tmp.jpg"
# will be used.
* * * * * :
ftp -host 123.123.123.123 -user elvis -pass presley
-src hugesize.jpg -dest /home/elvis/king.jpg -temp
tmp.jpg;
%
```

Example 2

```
# This command will every hour, every five seconds
# for twenty minutes, download a fullsize image
# from camera 3 and save the images with a time
# stamp in the filename.
0 * * * * :
ftp -src fullsize.jpg -host an.interesting.site
-dest tmp/full$h$m$s.jpg -user billy -pass startrek
-loop s5 -time m20 -cam 3;
%
```

Example 3

```
# This command will send 1001 consecutive fullsize
# images to "funny.host.name". The first and last
# images will be named "fullsize1000.jpg" and
# "fullsize2000.jpg", respectively.
* * * * * :
ftp -host funny.host.name -user camera1 -pass secret
-src fullsize.jpg -dest
/home/camera1/tmp/fullsize$r1000-2000.jpg;
%
```

log

This command writes a message to the camera server log file.

Note: To display the log file, you type the following in the address/location field of your Web browser: http://<camera server>/log/messages

Syntax

```
log [MESSAGE];
```

Options

[MESSAGE]

The message string must be surrounded by quotation marks.

Example:

```
# This command will write a message to the log file
# when someone presses the Control button on the
# camera server front panel.
* * * * * /B :
log "The Control button was pressed." ;
%
```

mail

This command uses the Simple Mail Transfer Protocol (SMTP) for sending images and files from your AXIS 2400 to e-mail addresses.

Note: To use the mail command, you must specify the IP address of the mail server and a valid return address on the TCP/IP page.

Syntax

mail [-s SUBJECT] [-a ATTACHMENTS] [-t RECIPIENTS]
[-cam CAMERANUMBER] [-b BUFFERTYPE] [-n NUMBER];

Options

`-s` Specifies the subject text for the e-mail. A simple one-word subject does not require quotation marks. A subject with multiple words must be surrounded by quotation marks.

`-a` Specifies attachments such as images or files. To include the image buffer, specify images/buffer.jpg.

`-t` Specifies the e-mail address of the recipient(s).

`-cam` Specifies the camera source, i.e. 1-5. If omitted, the default camera will be used.

`-b` Specifies the buffer type, i.e. fullsize.jpg, halfsize.jpg or hugesize.jpg. Only valid if -a is set to images/buffer.jpg.

`-n` Specifies the number of buffered images to be included in the e-mail. Only valid if -src is set to images/buffer.jpg.

Example 1

```
# This command will send an e-mail with the
# subject "Hello" and the attached file
# fullsize.jpg to someone@company.com
* * * * * :
mail -s Hello -a fullsize.jpg -t someone@company.com;
%
```

Example 2

```
# This command will send an e-mail with the
# subject "This "fullsize.jpg" was sent from my
# AXIS 2400" to two recipients.
* * * * * :
mail -s "This \"fullsize.jpg\" was sent from my AXIS 2400" -a fullsize.jpg -t
someone@axis.com anotherone@axis.com;
%
```

Example 3

```
# This command will send an e-mail with five
# attachments.
* * * * * :
mail -a fullsize.jpg halfsize.jpg hugesize.ppm cronscript config -t me@at.home;
%
```

ptz

This command pans, tilts and zooms connected video cameras.

Syntax

`ptz` [-speed VALUE[DEVICE]][-preset POSITION]
[-cam CAMERANUMBER][-zoom VALUE][-move DIRECTION]
[-pan ANGLE][-tilt ANGLE];

Options

`-speed`

Specifies with which speed the camera source will move between the defined positions. Note that this option is device dependent and is supported by the drivers Sony G20, Sony E30 and VCC3.

To specify the speed for Sony G20 and E30 enter a value between 1 - 16, where 1 is slow and 16 fast. For the VCC3, enter a value between 1 - 76, where 1 is slow and 76 fast.

`-preset`
Specifies the preset position, i.e. 1-10. Note that camera source must be defined on the **Configuration - Preset Position** page.

`-cam` Specifies the camera source, i.e. 1 - 5. If omitted, the default camera will be used. This is the camera defined as default on the **Configuration - Video** page.

`-zoom` Specifies the zoom value of the selected camera source, i.e. 1 - 999. Note that this option is device dependent and is supported by the drivers Sony, Canon and Videmech.

`-move` Specifies in which direction the selected camera source shall be moved, i.e. home, up, upleft, left, downleft, down, downright, right, upright. Note that the move home option is only supported by the drivers Sony, Canon and Videmech.

`-pan` Specifies the pan angle of the selected camera source, i.e. -180 - 180. Note that this option is device dependent and is supported by the drivers Sony, Canon and Videmech.

`-tilt` Specifies the tilt angle of the selected camera source, i.e. -180 - 180. Note that this option is device dependent and is supported by the drivers Sony, Canon and Videmech.

Example 1

```
# This command moves camera 2 up five degrees and
# zooms wide.
* * * * * :
ptz -cam 2 -move up -zoom 1
```

Example 2

```
# This command moves the camera source to preset
# position 1.
* * * * * :
ptz -preset 1;
```

Note: The options must be entered in the following order:

-speed, -preset, -cam, -zoom, -move, -pan, -tilt

For example, `ptz -tilt 10 -cam 4`, will not work, you must enter, `ptz -cam 4 -tilt 10`.

reset

This command resets the software or hardware of the AXIS 2400.

Syntax

```
reset [-soft | -hard];
```

Options

`-soft` Reinitiates the AXIS 2400 protocols.

`-hard` Performs a complete reboot of the AXIS 2400.

Example

```
# This command will reset the AXIS 2400 hardware
# once a day.
0 0 * * * :
reset -hard;
%
```

sleep

This command adds a pause to the programming script execution. The command is typically used if you want to assure that the previous command is finished before continuing the script.

Syntax

sleep <seconds>;

Options

<seconds>

Specifies the number of seconds to wait before proceeding with the next command in the event entry.

Example

```
# This command will result in a 30 seconds pause
# in the CRON script execution.
* * * * * :
sleep 30;
%
```

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